The Mining Journal
RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 755.—Vol. XX.] LONDON, SATURDAY, FEBRUARY 9, 1850. [Price 6d.

TO CONTRACTORS, ENGINE-WRIGHTS, IRON MANUFACTURERS, COLLIERY OWNERS, WAGGON BUILDERS, AGRICULTURISTS, HORSE DEALERS, HOUSE BUILDERS, BLACKSMITHS, MILLWRIGHTS, QUARRYMEN, &c. &c.

MR. GEORGE HARDCASTLE announces that he has been instructed by Messrs. JOHN CRAVEN and SONS, who have completed their contract at the SUNDERLAND DOCK, to SELL, BY PUBLIC AUCTION, on the Premises, on Monday, Tuesday, and Wednesday, the 18th, 19th, and 20th of February, instant, the following most valuable

WORKING STOCK: viz.—

IRON, &c.—500 tons malleable flat-bottomed rails, points, and crossings, new waggon wheels, screw bolts and nuts, scrap iron, square and round new iron, chain of various sizes, doors, and fire-grates.

ENGINES—locomotive and tender; 12-inch travelling 10-horse engine for common roads, and used in general farming operations; 1 6-horse, 2 8-horse, and 1 12-horse, with malleable chimney, drum, and gearing for drawing, each constructed so as to be perfected portable engines.

MACHINES, &c.—powerful travelling cranes, waggon-mounted cranes from 2 to 4 ton power, screwing machine with taps and dies, lathe with slide rest, large incline shearers with brasks and gearing, large and small metal incline drums, new wrought-iron engine chimney, new boiler 30 feet by 4½ feet, set of 10-inch double-headed pumps, several 6-inch hand pumps, wood and iron farm tables, horse machine, wood and iron blocks, saw mill frame and saws, weighing machine, patent scales and weights, screw jacks, hydraulic press, punching machine, straightening machine for railway plates, and screw pump. Several sets of powerful crane gearing to lift from 4 to 20 tons, large pile engine with 10 cwt. and 20 cwt. rams, small hand-pile engine.

CARRIAGES, &c.—single horse carts, three-wheeled carts, side and end earth waggons, powerful timber carriage, 4-horse do., stone trucks, wheelbarrows, and water cart.

TOOLS AND SUNDRIES—bellows, anvils, vices, mandrills, swages, hammers, crowbars, levers, ropes, water casks, and water tank.

BUILDING MATERIALS—tiles, roofing, uprights, window frames, door frames, materials of smiths' and carpenters' shops, large platform 2-inch stuff, and fire bricks.

STABLE STOCK, &c.—gig horse of great symmetry, speed, and power; eight horses for cart, plough, or saddle; chaff cutter, oat crusher, and bean crusher, for either steam or horse-power; racks, mangers, corn-bins, large wood stable with tiled roof; horse sheets, stable utensils; a large quantity of harness, traces, collars, hames, cart saddles, &c.

TIMBER, &c.—several thousand feet of 3-inch planks, square timber and scantling for building and colliery purposes, a large quantity of larch and Scotch fir railway sleepers, garden fencing. Also, 3500 cubic feet of stout MEMEL TIMBER and ROCK ELM, screw-bolted together, outside THE SEA-COFFERDAM at the south end of the dock—to remain till the opening of the dock.

Catalogues in due course.—Purchases can be cheaply removed by river, railway, and turnpike, into the interior, and by sea to any part of the coast.—The sale will commence each day at Ten for Eleven precisely.

Refreshments will be provided for Purchasers.

Payments under £20 in cash; above £20 in approved bills at two months.

Sunderland, Feb. 6, 1850.

SWITHLAND AND GROBY SLATE WORKS, LEICESTERSHIRE.—These valuable SLATE QUARRIES, containing large beds of Roofing Slate, Slate Stone, Blocks for Cheese Presses, Milk Slates, &c., are TO BE LET, from Lady-day next, on a lease for 7 or 14 years. There is an excellent house on the works, near Groby, with 12 acres of land, and all convenient machinery for sawing by steam and manufacturing slate.—Steward's Hay, Leicester, Jan. 26, 1850.

SEA SALE COLLIERY TO BE LET, and Entered at May next—all that valuable and CURRENT-GOING COLLIERY, situated on the SOUTH BANK of the TYNE, at JARROW, in the county of Durham, containing the BENSHAM and LOW MAIN SEAMS of COAL in great perfection. The colliery is fitted up on the most improved manner, and may be undertaken with a very moderate capital.

For particulars apply to Mr Matthias Dunn, colliery viewer, Newcastle-on-Tyne; or to Mr. Matthew Liddell, viewer, Benton Grange.

Newcastle-on-Tyne, Jan. 31, 1850.

TO ENGINEERS, IRON STEAM SHIPBUILDERS, MANUFACTURERS, & OTHERS.

TO BE SOLD, OR LET ON LEASE, EXTENSIVE MANUFACTURING PREMISES, with or without steam-power, and the valuable MACHINERY. The PREMISES are situate at BLACKWALL, having a water-side frontage of about 250 feet, near the junction of the River Lea with the Thames, possessing capabilities for building iron vessels upwards of 500 tons burden. The buildings have mostly been erected within a few years, at a cost of many thousand pounds. The situation also affords every facility for the transit of goods by land or water carriage, and coals can be landed direct from the colliers. The supply of water is unlimited, and free of expense. The Exchange and the public markets may be reached in little more than a quarter of an hour. The premises are applicable for any manufacturing business. The total area is 50,000 square feet, and the buildings are lofty, well lighted, and substantially erected.

The MACHINERY (the whole or any part of which may be taken or rejected) is of the best description, by the first makers, and with all the modern improvements, including a highly-finished STEAM-ENGINE and BOILER, 11 self-acting engine turning, boring, screw-cutting, and surface lathes, several planing, slotting, drilling, screwing, and shaping machines, 8 large grindstones, polishing wheels, all the requisite shafting and driving gear, 5 cutting and punching presses, smiths' forges and tools, cranes, triangles, and every requisite for the business.

The principal factory is fitted with a 25-ton travelling crane, working on an over-head tramway the whole length of the building, on to a strong timber double frame overhanging the river, for the purpose of erecting steam machinery in vessels, loading or unloading heavy weights, and transporting them to any part of the factory.

This establishment, from situation, extent, arrangement, and construction, together with the many local advantages it possesses, offers a most desirable opportunity to any person desirous of engaging in London in any trade requiring premises where space, contiguity to the docks, Exchange, and markets, the supply of coal and water on most favourable terms, and the speedy transit of goods at a low cost, are advantages of importance.—Further particulars, with lithographic plans, and cards to view the property, may be had of Messrs. Fuller and Horsey, Billiter-street, London.

ECONOMICAL STEAM-ENGINE—Surpassing the Cornish.

CRADDOCE'S PATENT DOUBLE CYLINDER HIGH-PRESSURE EXPANSIVE AND CONDENSING ENGINE,

Alike ADAPTED FOR MARINE, LOCOMOTIVE, AND STATIONARY PURPOSES.

BOILER.—Tubular, free from deposit, and perfectly safe from explosion.

ENGINE.—Not half the weight or bulk of ordinary engines.

FUEL.—Not half that required by the best engines of the common kind.

WATER.—Under 1 gallon per horse-power per day of 10 hours, for all purposes, with air as the medium of condensation if desired.

These engines are erected at a comparatively trifling expense, and are easily worked.

FOR SALE.

TWO 40-horse power ENGINES, suited to condense either by air or water.
ONE 25-horse power ditto ditto ditto
ONE 20-horse power ditto ditto ditto
A PAIR of OSCILLATING MARINE ENGINES, of 10-horse power.

These engines are quite new, with boiler, condenser, and regulating damper—all got up in the best and simplest manner. They are much simpler, and almost beyond comparison more compact than the Cornish engine, also more safe and economical than even those engines, yet the price of the Cornish is nearly double that at which these are offered.—Parties wanting engines will find in the above good bargains.

Apply to THOS. CRADDOCK, engineer, 36, Broad-street, Birmingham.

Also ON SALE, THREE 4-horse HIGH-PRESSURE ENGINES, simply arranged, and well got up.

ON SALE, A PORTABLE CONDENSING STEAM-ENGINE, with cylinder, 10 inches diameter, double power, fixed in a strong cast-metal framing, including 2 waggon boilers and their appendages; also winding gear, consisting of a pair of spur-wheels, shaft.—A pair of rope wheels and pulleys for flat-ropes.

A 10-inch cylinder PUMPING ENGINE, plain and strong, working an 8-feet stroke, without boilers.

A 10-inch cylinder PUMPING ENGINE, plain and strong, with a parallel motion at one end of the beam, working a 7-feet stroke, without boilers.

A CRUSHING MILL, consisting of 20-inch rollers, with wrought-iron shaft, wrought-iron balance levers, cast-metal framing, brass steps, and driving gear.

The mill has been in use only for a short period; new shells for the rollers would be supplied, when the mill would be equal to new.

A QUANTITY of WROUGHT-IRON EDGE RAILS, about 18 lb. per yard.

Apply to JOSEPH L. WELL, Engineer and Licensed Machinery Valuer, Hawarden, or Treloggan Mines, near Holywell, Flintshire.

STEAM-ENGINE.—TO BE DISPOSED OF, a HIGH-PRESSURE STEAM-ENGINE—cylinder 18½ inches in diameter, 4 feet stroke, equal beam; fly-wheel 14 feet in diameter; double pumping gear, winding shaft, and winding verticals; 1 driving wheel, on the end of the fly-wheel shaft, and 2 spur wheels, on the winding and pumping shaft; a FIVE-TON BOILER, 28 feet long and 6 feet in diameter, egg ends, with the steam and water-pipes connecting the engine and boiler; safety valve, floats, &c. Also, 22 yards of 9-inch PUMP TREES, including blackpiece and windbore, bolts, &c. The engine is quite new, and has never worked further than to try it, and being now connected with the boiler, intending purchasers may see it at work, and it will be disposed of as it now stands, with all its apparatus complete, although not enumerated in this advertisement.

For further particulars, and to view the same, apply to Mr. John Slater, Wrixa Rose Colliery, Blackwood, Newport, Monmouthshire.—Feb. 1, 1850.

STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 20th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA.—On the 20th and 29th of every month. CONSTANTINOPLE.—On the 29th of the month. ALEXANDRIA.—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Leadenhall-street, London; and 87, High-street, Southampton.

ASTURIAN MINING COMPANY—IN LIQUIDATION.—Notice is hereby given, that the REAL ESTATE, the CONCESSIONS of COAL and CINNABAR MINES, and the WORKS of this company at MIERES DEL CAMINO, and in the adjacent districts; the QUICKSILVER MINES of LA EUGENIA, near Pola de Lena, and the COAL MINES at SANTO FIRME, situate in the province of OVIEDO, and principality of the ASTURIAS, in SPAIN, have been ordered by the Board of Directors and Liquidators TO BE SOLD, under TENDER; such Tenders also so include the Purchase, by valuation, in the usual manner, of the Stock in hand of all kinds, Implements and Articles used in the various departments of manufacture at the said works.

The Tenders to be subject to the approval of a general meeting of the company, to which is reserved the right of accepting the offer which may appear most beneficial to the shareholders of the said company.

A description of the property and the conditions of sale will be ready for inspection at Madrid with Messrs. H. O'Shea and Co., bankers, and E. Kelly, Esq.; at Mieres del Camino, with the company's superintendant; at Gijon, with J. J. Kelly, Esq., British Vice-consul; and at the company's offices in London, on and after the 2d February next. All tenders must be sent to the principal office of the company, 9, Austinfriars, London, on or before the 28th February next, addressed to "The Directors and Liquidators of the Asturian Mining Company," to whom also should be addressed all enquiries respecting the sale.—The works may be viewed on application to Mr. George Lantbley, the superintendent at Mieres del Camino, in the Asturias.

By order of the Board of Directors and Liquidators,

K. MACKENZIE, Secretary.

Offices of the Company, 9, Austinfriars, London, Jan. 22, 1850.

CRAIG DDU SLATE COMPANY, FESTINIOG, MERIONETHSHIRE.—The Directors having decided on considerably EXTENDING THE WORKINGS of this VALUABLE QUARRY, in order further to develope the immense resources already laid bare, and to meet the great demand for the Slate, propose to ISSUE A LIMITED NUMBER OF THE RESERVED SHARES. Information will be afforded, and a statement given, at the company's offices, 25, Parliament-street, where application may also be made for shares; or to Mr. Farrer, the company's solicitor, Doctors'-commons.

COMBMARTIN AND NORTH DEVON LEAD AND SILVER SMELTING COMPANY.

REGISTERED UNDER THE JOINT-STOCK COMPANIES' ACT.

The SMELTING-WORKS of the above COMPANY are in ACTIVE OPERATION.—SAMPLES of LEAD and SILVERY ORES are requested to be forwarded to Captain Cornelius Bawden, Combmartin, near Ilfracombe, North Devon.

Payment for ores by bill, at three months, or cash if required.

Combmartin, Jan. 1, 1850. THOMAS L. WILKSHIRE, Secretary.

EAST BIRCH TOR TIN MINING COMPANY, DEVON.

Capital £7500—divided into 3000 shares, of £2 each.

Incorporated pursuant to Act of Parliament, 7 and 8 Victoria, cap. 110.

SEVEN HUNDRED SHARES REMAIN TO BE ALLOTTED.

This valuable MINERAL PROPERTY is situate in the parishes of NORTH BOVEY and MANATON, upon DARTMOOR, 18 miles west of Exeter, in the county of Devon.

The mine is held by this company for a perpetually renewable term of years, without fine or premium, at the very low dues of 1-28th of the realised value of the ores. It has hitherto been conducted on the Cost-book system, but was completely registered and incorporated under the Act 7 and 8 Vic., cap. 110, the 30th Nov., 1849, and a Deed of Settlement has been prepared pursuant to that Act, by which arrangements the liabilities of the shareholders and the method of conducting the business of the company have been defined, and the advantages of complete registration secured.

The affairs of the mine are under the management of a board of directors in London, chosen by the shareholders at their annual meeting. General meetings of the shareholders will be held half-yearly (10 days' notice being given), when a full statement of the company's affairs will be submitted to the shareholders. Ample provisions have also been made for an accurate and impartial periodical audit of the company's accounts.

The mine contains 10 distinct lodes—the richness of which has been fully and fairly tested—so that it is certain that, by the employment of about £1500 additional capital, it cannot fail to make a highly productive and dividend-paying mine. Birch Tor and Vitifer Mines, on the same lodes, and immediately adjoining East Birch Tor on the west, have returned a profit of upwards of £100,000 worth of tin.

The shafts, water-wheels, lift of pumps, stamps, workshops, and all necessary apparatus, are complete, so that the additional capital will be expended in sinking to a greater depth, driving levels, and raising tin.

There is ample water-power to work the mine to a great depth, whereby the large expense of a steam-engine is saved.

The mine has been brought to its present promising state by an outlay on the part of a small proprietary of £12,000. Of this sum £2800 were expended in driving the cross-cut adit to intersect the lodes and unwater the mine. Upwards of £2000 has been returned by the sale of ores from the present shallow workings; and it is confidently anticipated that, by the disposal of the 700 reserved shares, the company's funds will be amply sufficient to ensure complete success.

The object now is to cut the extreme north lode No. 1, which has proved so productive in the adjoining mine.

Some excellent rocks of tin have been recently raised from No. 5 lode, and the ore at the last sampling fetched £42 per ton.

2, Winchester-buildings, February, 1850.

TAMAR SILVER-LEAD MINING COMPANY.—*Salvador House, Bishopsgate, February 7, 1850.*

At a SPECIAL GENERAL MEETING of the shareholders in this Company, held this day,—P. N. JOHNSON, Esq., F.R.S., in the chair,—the following resolutions were passed unanimously:—

That the directors be empowered to retain the profits until they amount to Ten Shillings per share; after which the Certificates of Shares to be given in and credited with Ten Shillings per share, as paid call, and declared with Ten Shillings per share, as paid dividend.

That the Thanks of this Meeting be presented to P. N. Johnson, Esq., for his kindness and urbanity in the chair.

That the Thanks of the Meeting be given to Mr. Brainsby, and the other Directors, for their excellent management of the Company's Property.

WEST POLGOOTH TIN MINING COMPANY.

Capital £12500, in 2500 shares, of £5 each.

CONDUCTED ON THE COST-BOOK SYSTEM.

Deposit £1 per share.

OFFICES: 15, OLD BROAD-STREET.

This valuable MINERAL PROPERTY is that portion of the unworked ore ground in a line between the Great Hewas and the Great Polgooth Mines: in extent it is about three-quarters of a mile on the course of the lodes, and its mean breadth half a mile—held under a lease of 21 years from Lord Mount Edgecumbe, at 1-18th dues. The Hewas Mine returned from one lode the greatest quantity of tin in the time of any mine in the kingdom. Polgooth is now making, at a large profit, returns of nearly £3000 per month; both these mines are more than 140 fathoms deep. West Polgooth Mine is only down 34 fathoms—consequently there remains above 70 fathoms of virgin ore ground for the present company to return before they reach the level of the adjoining mines, and which is computed to be sufficient to employ 800 persons for 20 years to come. The tin is of a very fine quality, and with an outlay of £6000, 35 tons of tin per month may be returned, yielding a profit of 25 per cent.

The management is by a London committee, and the works on the mine prosecuted at the lowest possible cost.

A prospectus, with lithograph plan and section attached, may be had by applying to Mr. Robert Williams, the purser, at Mr. Richardson's offices, 15, Old Broad-street, where the Cost-book, containing the names of the directors, the rules, reports, specimens, working plans, &c., may be seen, and of whom full particulars may be known.

STRUVE'S PATENT MINE VENTILATOR.

Cost—£150.

TO COLLIERY PROPRIETORS.

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus.

COST of an APPARATUS to produce a ventilation of 20,000 cubic feet per minute, ONE HUNDRED and FIFTY POUNDS, exclusive of patent right. This amount of ventilation would be sufficient for a mine working 150 tons per day, provided it was not very deep; in which case it would be desirable to provide for 30,000 cubic feet of air per minute. The capabilities of the Ventilator may be doubled at any future time, at a comparatively small cost.

The Ventilator has been at work for upwards of nine months at the Englesbush Colliery, near Neath, working under a rarefaction of 2½ to 3 inches of water, which demonstrates the impracticability of furnace ventilation, where the shafts are shallow and the airways small.—It is practical to rarify a mine by this ventilator to the extent of 2 feet of water, or 2 inches of mercury.

LICENSES will be GRANTED on application to

Mr. WILLIAM PRICE STRUVE, Swansea,
Civil Engineer and Mineral Surveyor.

WANTED,—A COLLIERY BAILIFF, or MANAGER. He must be competent to the general business of a Colliery now banding, including the superintendence of the engine-work, sinking, and other necessaries, for a work which has at the present time 40 fathoms of walling efficiently completed.

Applications to be addressed to the Secretary, Great Western Coal-works, St. Philip's Marsh, Bristol.

*** None need apply, unless provided with certificates of competence to the situation, character, &c.

WANTED,—An experienced Person to MANAGE a COLLIERY; he must understand thoroughly the North Country System of Underground Workings.—Apply (with reference) at the Cymen Coal-office, Bute Docks, Cardiff.

WANTED,—By an experienced practical MINER, who is thoroughly acquainted with Mining in all its branches, Geological and Mineralogical Formations, Assaying, &c., and who has for many years had the management of extensive mines in the United Kingdom, a similar SITUATION, either at home or abroad. Letters to be addressed "W. T."; or most unexceptionable references, as to character and ability, may be inspected at the *Mining Journal* office, 26, Fleet-street, London.

Dated February 3, 1850.

WANTED,—A PARTNER in a COLLIERY, who can advance £3000, to take the place of a retiring one, who is going to Port Natal. The Colliery is situate in Lancashire, and is now in full work, and the clear profits exceed £1000 per annum. Also, WANTED, ONE or TWO GENTLEMEN, who can advance from £3000 to £5000 each, to take an active part in London, Hull, or France (Havre), to join the advertiser, who is a practical man in working a Colliery (Ironstone included), in Yorkshire, where the profits will realise from £5000 per annum.

References given and required, from principals only.—Address, "R. B.," Box 71, Post-office, Rochdale, Lancashire.

TO CAPITALISTS.—The Advertiser, who possesses a most VALUABLE INVENTION, wishes to MEET with a CAPITALIST who will JOIN HIM in CARRYING OUT the SAME. The invention is secured by two patents; its value is fully proved, and orders to a considerable extent may be immediately had. If properly carried out, it cannot fail to realise an immense return on the capital embarked. The advertiser will treat liberally with a party disposed to enter into the matter in a spirited manner.—Address (by letter, pre-paid) "S. K." care of Mr. George Shaw, Patent Offices, Cannon-street, Birmingham; or to "S. K." care of the Editor of the *Mining Journal*, 26, Fleet-street, London.

TO IRONMASTERS.—WANTED, THREE THOUSAND TONS of RAILS and CHAIRS, for a Foreign Contract. The rails to be about 70 lbs. to the yard: payment in cash.—Particulars to be sent to Messrs. Zaluets and Co., Moorgate-street, London, on or before the 15th February next.

TO BE SOLD,—A MOST VALUABLE PATENT—applicable to a great variety of articles in every-day use, and which command an excellent profit to the manufacturer.—For further particulars apply to Mr. J. Baker, commission agent, Wolverhampton.

STEAM-ENGINE FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT, a 33-inch CYLINDER STEAM-ENGINE, 8 feet stroke, equal beam, with Steam Case, Brass Air Pump, Boiler and Connections, and Capstan and Shears.—Application to be made to Mr. F. Pryor, Bell Cottage, Redruth.—Jan. 2, 1850.

CAMBORNE CONSOLS COPPER MINES, CAMBORNE, CORNWALL.—OFFICES REMOVED to 22, NEW BRIDGE-STREET, BLACKFRIARS.—London, January, 1850. H. L. T. VON USTER, Secretary.

COURT GRANGE SILVER-LEAD MINES, CARDIGANSHIRE.—OFFICES REMOVED to No. 22, NEW BRIDGE-STREET, BLACKFRIARS.—London, January, 1850. H. L. T. VON USTER, Secretary.

MR. JOHN BOYD (Agent for Messrs. Bolckow and Vaughan of the Middlesbrough and Witton-park Iron-works) SUPPLIES all descriptions of RAIL, BAR, and BOLT-IRON, Rotors, Pipes, Chairs, and general Castings; also Forgings and Chain Cables, and Anchors.

OFFICE, 15, EAST INDIA CHAMBERS, LEADENHALL-STREET.

MR. T. TYACK, Ironmonger and General Merchant, CAMBORNE, being situated in the midst of the most flourishing Mines in the County of Cornwall, begs to inform the mining world that he has commenced as a MINE BROKER. From the facilities afforded him of knowing the condition of most property, and the best market for the purchase and sale of shares, he respectfully offers his services to those who may be inclined to buy or sell, to favour him with a share of their patronage and support.—Camborne, Feb. 6.

MESSRS. JOHN T. TEAGUE & CO., MINE SHARE BROKERS, 4, KING-STREET, TRURO, CORNWALL, are BUYERS in South Tolgus, Stray Park, Comfort, Wheal Henry, West Frances, Tolcarne, and Condurrow; and SELLERS in South Frances, North Pool, South Basset, Wheal Tremayne, and Wheal Friendly.

MINING OFFICES, No. 3, GEORGE-YARD, LOMBARD-STREET, LONDON.—Mr. THOS. P. THOMAS is a BUYER of South Basset, South Frances, South Tolgus, West Wheal Jewel, Cook's Kitchen, East Buller, Wheal Seton, and Wheal Treiawny; and is a SELLER of Providence Mines, St. Ives Consols, West Caradon, Treviskey and Barrier, Wheal Comfort, and Tregorden.

Mr. T. P. THOMAS will at all times feel pleasure in giving information as to the Cornish, Welsh, and Foreign Mines, upon application.

MR. T. A. READWIN, MINING OFFICES, *7, WINCHESTER-BUILDINGS, OLD BROAD-STREET, LONDON.*

MR. RYE is a BUYER in Stray Park, Treviskey, South Tolgus, Condurrow, and United Mines.—For particulars, apply at his office, No. 77, Old Broad-street, City.

MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND AND MINING SURVEYOR.
No. 15, OLD BROAD-STREET, LONDON.

JAMES LANE, MINING SHARE DEALER, *30, OLD BROAD-STREET, LONDON.*

COPIAPO MINING COMPANY.—Notice is hereby given, that the HALF-YEARLY MEETING of the Shareholders in this Company will be HELD at their office, No. 22, Austinfriars, on Thursday, the 21st inst., at One o'clock precisely. By order of the Directors,

22, Austinfriars, Feb. 8, 1850. FRED. GRELLET, Secretary.

EAST BIRCH TOR TIN MINING COMPANY (Incorporated pursuant to 7 and 8 Vic., cap. 110).—Notice is hereby given, that the ANNUAL GENERAL MEETING of the shareholders will be HELD at the offices of the company, 2, Winchester-buildings, City, on Tuesday, the 12th day of February next, at Twelve o'clock precisely.

T. A. READWIN, Secretary.

London, January 23, 1850.

MEXICAN AND SOUTH AMERICAN COMPANY.—The Directors of the Mexican and South American Company hereby give notice that, on Friday, February 15, at Two o'clock, they will be ready to receive, at the Company's office, 10, New broad-street-mews, TENDERS for the undermentioned SHARES in the said Company, the Call on which, due 17th October, 1849, has not been paid:—

Certificates of Five Shares each:—Nos. 29, 30, 37, 63, 78, 230 to 232, 387, 365, 497, 513 534, 535, 589, 630, 936, 968, 985, 986, 3038, 9057, 9140, 2141, 2169, 2230 to 2232, 2314 to 2317, 2337, 2347, 2483, 2551, 2552, 2555 to 2562, 2599 to 2604, 2618, 2636, 2706, 2715, 2716.

Certificates of Ten Shares each:—1119, 1160, 1165, 1181, 1190, 1191, 1245, 1473, 1526, 1556, 1559, 1575, 1576, 1594, 1615, 1619, 1635, 1664, 1682, 1737, 1739, 1745, 1746, 1793, 1807, 1841, 1842, 1858, 1860, 1861.

The form of tender may be had at the Company's office.

H. W. SCHNEIDER, Managing Director.

No. 10, New Broad-street-mews, February 7, 1850.

REAL DEL MONTE MINING COMPANY.—Any Persons having CLAIMS upon this Company (which was dissolved by Resolutions of General Meetings, held on the 25th September and 30th October, 1848), are requested to send the particulars of the same to me, at No. 6, Queen-street-place, Southwark-bridge, London, before the 10th day of April next.

By order of the directors,

London, February 8, 1850. JOHN PHILLIPS, Secretary.

REAL DEL MONTE MINING COMPANY.—Notice is hereby given, that on Wednesdays and Saturdays after the 10th day of April next, the sum of TWO POUNDS will be PAYABLE upon every Red Debenture, and FOUR POUNDS upon every outstanding £50 Loan of 1827; being the first division of proceeds of sale of the Company's property. The Red Debentures or the Subscription Receipts for the Loans, must be left with me at the office, No. 6, Queen-street-place, Southwark-bridge, London, for at least one week previous to the payment of the Dividend. The holders of the above-mentioned £50 Loans of 1827 will, at the same time, be paid the proportion that may be due to them of the Trust Fund set aside in the year 1843.

By order of the directors,

London, February 9, 1850. JOHN PHILLIPS, Secretary.

Transactions of Scientific Bodies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY	Royal Botanic—Inner Circle, Regent's Park	3½ P.M.
MONDAY	Geographical—8, Waterloo-place	7 P.M.
	Medical—3, Bolt-court, Fleet-street	8 P.M.
TUESDAY	Medical and Chirurgical—53, Berners-street	8½ P.M.
	Civil Engineers—25, Great George-street	8 P.M.
	Zoological—11, Hanover-square	9 P.M.
	Syro-Egyptian—71, Mortimer-street, Cavendish-square	7½ P.M.
WEDNESDAY	Society of Arts—Adelphi	8½ P.M.
	Graphic—Thatched House Tavern	8 P.M.
	Microscopical—21, Regent-street	7 P.M.
	Pharmaceutical—17, Bloomsbury-square	9 P.M.
	Ethnological—17, Saville-row	8 P.M.
	Literary Fund—73, Great Russell-street	3 P.M.
THURSDAY	Royal—Somerset-house	8 P.M.
	Antiquaries—Somerset-house	8 P.M.
	Royal Society of Literature—4, St. Martin's-place	7 P.M.
FRIDAY	Geological—Somerset House	1 P.M.
	Royal Institution—Albermarle-street	8½ P.M.
SATURDAY	Asiatic—5, New Burlington-street	2 P.M.
	Westminster Medical—17, Saville-row	8 P.M.

INSTITUTION OF CIVIL ENGINEERS.

FEBRUARY 8.—JAMES SIMPSON, Esq. (Vice-president), in the Chair.

The discussion was renewed on the Rev. Mr. Clutterbuck's paper—"On the Alternations and Depressions in the Chalk-water Level under London," and was continued throughout the meeting, so that no original communication could be read.

It was contended, that the area of the chalk district, subject to infiltration, for the supply of the springs and streams uniting in the basin of the Colne, could not possibly exceed the original published estimate of 118½ square miles, and that the proportion of water filtrating through, for that purpose, was much less than had ever hitherto been estimated, inasmuch as records by Mr. Dickinson's gauge was to a much greater amount, than those afforded by the gauges kept by other experimenters. It was also contended, that the original position assumed in the paper had not been weakened by the subsequent discussion; that the observations of the chemists had tended to confirm the statement of the probability of an infiltration of water from the Thames. The practical conclusion to be drawn from the observations recorded in the author's several papers, were—That the natural drainage and replenishment of the chalk stratum might be traced and accounted for, by observing the alternation of level in various localities, and at different seasons. That any large quantity of water abstracted from the chalk stratum, at any given point, caused a depression of level around the point of such abstraction. That in the upper district any such abstraction of water would interfere with, and diminish the supply of, the streams by which the drainage of the district was regulated; and, lastly, that the depression of level under London, by pumping from Artesian wells, had proved that the rapidity of demand already exceeded that of the supply, and that any attempt to draw a large additional quantity for public use, would be attended with disastrous consequences. It was suggested that, considering the great works of drainage and water supply which were in contemplation for the metropolis, and looking to the essential importance of having accurate and authentic geological information, in order that those great works might be executed on a sound and certain basis, that the geological survey now being carried on by Government, in a remote district of North Wales, where no urgent need existed for early geological information, and where no new works of paramount importance were in progress, or in contemplation, should be transferred at once to the metropolitan districts, with a view to throw light on the real structure, mechanical and chemical, of the deep water-bearing strata, on which opinions so varying and so conflicting had been advanced.

An inquiry was made whether any steps had been taken by the council, in consequence of the statement submitted at the meeting of Tuesday, January 29, urging the consideration of the manner in which the interests of the public at large, and of the profession, were likely to be affected by the attitude recently assumed by the Railway Commission in reference to the strength of the wrought-iron bridges used on railways. It was stated that the council had not as yet taken any decided steps in the matter; but that a course had been suggested, which, being followed, would most probably lead to satisfactory results. After this assurance, the members expressed their confidence of the interests of the profession being in safe hands, and that every step would be taken for insuring their position and professional reputation.

The motion which had been prepared was, therefore, withdrawn; and the chairman requested any communications on the subject to be made in writing to the secretary, who would lay them before the council.

At the monthly ballot the following candidates were duly elected:—R. S. Haggar, R. Murray, J. S. Peirce, G. Sibley, H. Smith, and W. Strode, as associates.—The paper announced to be read at the meeting of Tuesday, Feb. 9, was "On the Theory of Transverse Strain, with Rules for Calculating and Constructing the Strength of Cast-iron Beams of different Forms," by Mr. W. T. Doyne, Assoc. Inst. C.E.

STAITE'S ELECTRIC LIGHT.

At the Society of Arts, on Wednesday evening last, a paper, by Messrs. Staite and Petrie, was read by the secretary on the electric light, as improved by the patentees; and Mr. Petrie subsequently read a description of a new and delicate galvanometer, by which the intensity of the electric current could be weighed and measured to the greatest nicety; and, consequently, on coming into commercial use for artificial illumination, the charges of the light can be regulated in proportion to its power, with as much correctness as gas by the present meter. The paper went through the *rationale* of the galvanic current—its properties in producing intense light from charcoal points—and remarked on the great difficulties which had hitherto been insuperable in keeping up the necessary distance between the points as they separated by the operation of the current. The patentees had at length succeeded in overcoming this principal obstacle by the insertion of a bar of soft iron in a helix of insulated copper wire, which becoming a magnet at the instant there is a tendency in the points to separate, immediately acts upon them, keeping them at the required distance. In the *Mining Journal* of the 19th Jan. last, we noticed Mr. Staite's exhibition at Crosby Hall on the previous evening, and there described the regulating magnet, the decomposition of the light into the spectrum by the prism, and the irridium points in lieu of carbon for lights for private apartments, which will remain constant a great length of time. We also noticed a new battery, which Messrs. Staite and Petrie have patented, but not yet specified, which they state has solved the problem of keeping up a constant battery, and securing a continuance of the light in a perfectly regular manner. This battery, the paper stated, would be explained on a future evening at the society's room.

[It is with much regret we observe a tendency on the part of the council of the society, or through some indiscreet adviser, to endeavour to force the reading of two papers in one evening, which all experience has shown cannot be done without materially diminishing the interest of the subject and stifling discussion. On Wednesday last, a long elaborate paper by Mr. Findlay was read, and illustrated by numerous diagrams, on the construction of breakwaters, which took upwards of an hour to read; no discussion ensued, but the chairman (James Walker, Esq.) spoke at some length, to the great impatience of the audience (a very large one), the majority of whom had evidently come to hear the paper on the electric light, and wished Mr. Findlay's paper under one of his own described breakwaters. The consequence of squeezing in Mr. Staite's paper at the fag end of the evening resulted in its not being at all properly illustrated by the experiments, which were hastily performed, and were by no means so satisfactory as at the previous exhibition at Crosby Hall. No discussion took place on this generally-interesting subject, and no answers could be obtained to one or two questions which were asked, from the general move to leave, which took place at nearly half-past 10 o'clock. The subject of the electric light would well take up an evening to do it justice; while Mr. Findlay's paper, on a matter certainly of great importance, but far from generally interesting, was not probably understood or appreciated by 20 persons in the room, but should also have had an evening to itself. It is sincerely to be hoped by all well-wishers to the society, that a little better arrangement of these matters will be attended to.]

THE BUDE LIGHT OUTDONE.—There is just now a great stir amongst the scientific folk in New York, by reason of an alleged discovery by a gentleman named Payne, who, it is stated, has practically tested an almost expenseless mode of decomposing water, and reducing it to the gaseous state. By the simple operation of a very small machine, without galvanic batteries, or the consumption of metals or acids, and only the application of less than 1-300th part of 1-horse power. Mr. Payne produces 200 cubic feet of hydrogen gas and 100 feet of oxygen gas per hour. This quantity of these gases, the actual cost of which is less than one cent, furnishes as much heat by combustion as 2000 feet of the ordinary coal gas, and sufficient to supply light equal to 800 common lamps for 10 hours, or to warm an ordinary dwelling-house for 12 hours, including the requisite heat for the kitchens; or to supply the requisite heat for 1-horse power of steam. The invention, it is stated, has been tested by six months' operation, applied to the lighting of houses, and recently the applicability of these gases for the warming of houses has also been tested with perfectly satisfactory results. A steam-engine furnace and a parlour stove, both adapted for the burning of these gases, have been invented, and measures taken for securing patents thereof. The only actual expense of warming houses by this apparatus is that of winding-up a weight (like the winding-up of a clock) once a day; and the heat produced may be as easily graduated and regulated as the flame of the common gas-burner. No smoke whatever is produced, but a very small quantity of steam, sufficient to supply the requisite moisture to the atmosphere.

RAILWAY SPRINGS.

MR. W. A. ADAMS, of Birmingham, read a paper on this subject, at the meeting of the Institution of Mechanical Engineers, which we were compelled to omit from our report in last week's *Mining Journal*.

Mr. Adams commenced by explaining that buffing and bearing springs were applied to carriages and waggons, in order to absorb and neutralise, as far as possible, the force and momentum of the shocks to which the vehicles are exposed in their ordinary work. The most perfect spring for that purpose would be that which would absorb the entire power and space of the blow without disturbing the inertia of the vehicle; but this was impossible in practice, from the varying loads on bearing springs and the different force on buffing springs. After remarking that the nearest approach to perfection in bearing springs was in the modern first-class railway carriage, inasmuch as the disproportion of total weight, loaded or unloaded, was less than in any other vehicle, the object of the paper was stated to be the discussion and analysation of the various forms and descriptions of springs now in use, pointing out their advantages and defects, and suggesting such improvements in their details, as would lead to better effect and economy in their use and manufacture. At the present time there was no rule or formula by which engineers or manufacturers could ascertain the true form, weight, or quality of material to be used for effectually springing a railway vehicle, and the quality of material was in all cases of primary importance. The paper then detailed various elaborate experiments made by the writer, with a view of testing the quality of spring steel made from Swedish and English iron, from which it would appear that the elasticity, sustaining power, and toughness of English steel was superior to that made from Swedish iron; and proceeded to notice the different forms of lever and other springs in ordinary use, and their degree of efficiency. The laminated spring, the most common form of railway springs, was the most fully described. It consisted of a number of plates, equal in breadth and thickness, overlaying one another, the taper being given by reducing the plates successively in length; the principle of regulating such taper being to obtain an equal amount of deflection from each particle of material. The various ways in which this spring was made were alluded to, and the common form was stated to be incorrect, as the centre was proportionably weaker than the remainder of the spring, as well as being further weakened by the rivet hole through the centre. It was used on the London and North Western and Midland Railways, to sustain loads not exceeding six tons on the four springs, exclusive of the waggon body, but would well sustain an actual weight of three tons each. The waggon spring, or prop, used on part of the London and North Western, South Staffordshire, and Caledonian Railways, made with four plates, might be designated by the term cheap, and was the farthest remove from the objects sought to be attained, and caused much vibration and wear and tear. A waggon-bearing spring in extensive use on several lines was the same as the laminated spring, with the exception that its ends were rolled into eyes, and hung on small shackles. This peculiarity gave it quickness of adaptation to the inequalities of the road, and the friction at the ends was nearly obviated; but its disadvantages were, that a greater quantity of material was required to carry a given load, the tension on the sole bars was the reverse of the ordinary spring, and in consequence of the great space passed through, the variations of the load would considerably vary the height of the buffers from the rails. The carriage spring invented by Mr. Wharton, of Euston Station, was composed of plates, termed "long spear pointed," and a brace. This combination afforded the means of firmly attaching the axle-box to the spring and brace, and it was now generally used for passenger carriages. The amount of tension was at all times about the same, and the effect of the inequalities of the road was transmitted to the body through the elastic medium of the spring. Buchanan's spring, formed of flat horizontal plates, tapered in thickness, fastened in the centre, and impinging on the ends only, possessed no remarkable advantages over the ordinary laminated spring whilst it had three objections, the most important of which was the uncertainty of manufacture, in consequence of the tapered thickness of the plates, and the difficulty of tempering them in such a form. Adams's bow spring, consisted of plates tapered in width, and terminating in eyes. Its advantages were its independence of axle guards, its permission to the wheels and axle bars to traverse laterally in passing curves and impediments, and its quick adaptation to lateral and perpendicular blows, thus preserving the inertia of the body from disturbance. In consequence of its re-action at high speed, causing a rebound, and producing on repetition much oscillation, it has been rendered useless for four-wheel carriages, but is successfully used in carriages of double that number of wheels. The objections against the spiral bearing spring used under engine tenders were, that it bore on one point of the frame, instead of two, and the much greater uncertainty in the degree of elasticity and supporting power, than in flat springs composed of many plates. The paper then proceeded to explain buffing and draw springs. The laminated spring was described as superior to any modern substitute, for its moderate amount of resisting power developed through so large a space. The laminated draw-spring was equally praised for its effective working. The spiral draw-spring was said to be open to the same objections as the bearing spring. The paper then explained a buffer spring, by De Bergue, packed with rings of India-rubber, which, in the opinion of the writer, was the least effective yet produced. The stroke was short, and only developed under extraordinary pressure, and it was very questionable whether, in the event of a collision, the train would not collapse before the immense sustaining powers of the spring were developed. It was also questionable whether the rubber was so durable as supposed. Todd's buffers were similar to De Bergue's, excepting that the packing was of cork, which was more preferable, being more compressible than rubber. Adams's disk buffer was next mentioned, which consisted of a number of disk springs, made from circular plates of steel, with a radiating piece cut out, to admit of its being pressed into a conical form. It was superior to the foregoing, as the total amount of stroke was developed, and the former could be properly adjusted by the thickness of the plates. A brief description of Webster's air buffer followed, and the last description was of Brown's conical buffer spring. The resisting power in this adaptation was that of a spring made in the form of a cone, having the advantage of rotating at the point, thereby lessening the tendency to fracture and undue strain. Its sustaining power was nearly equal to the laminated buffer, and from its comparatively moderate price it was, in the opinion of the author, the most eligible of external buffers, but not equalling the laminated springs. This paper concluded, by observing that it was desirable to form a true and correct table of the sizes, weight, sustaining power, and deflections of laminated, bearing, and buffing springs. It was suggested that the discussion of this paper should also be adjourned to a more convenient opportunity; and after a few words from Mr. Fuller, who stated that 100,000 of De Bergue's springs were in use, and no case of failure had been reported, the subject was adjourned.

BAILLIE'S PATENT VOLUTE SPRINGS.—Messrs. Spencer and Son, Newcastle-upon-Tyne, are manufacturing railway springs of a peculiar construction, under a patent secured by Mr. Baillie; they consist of a flat sheet of steel, wound round into a spiral coil, sustaining the weight vertically; and the pressure and deflexion in reference to its breadth, instead of thickness, and the effect obtained, is said to sustain equal loads with one-third the weight necessary for common springs. By this arrangement, nearly all the iron now used in securing the springs to the body of the carriages is saved, and a more simple and rigid structure is obtained, with a smaller amount of wood-work. They may be employed as drawing, buffer, or coupling springs; and, although so light, from the peculiar mode in which the rigidity and elasticity of the material is applied, they are not liable to break; and even if they should, by any accident, be disarranged, they would still support the load, although inelastic. Messrs. R. Stephenson and Co., and R. and W. Hawthorn, of Newcastle, have applied these springs to a number of carriages with every satisfaction, and they have been two years in use on the Austrian railways with success.

PREVENTION OF ACCIDENTS ON RAILWAYS.—At a recent meeting of the Society of Arts, Mr. C. F. Whitworth read a paper on an apparatus for aiding the drivers of locomotive engines in cases of danger, and for preventing collisions on railways. The author proposes that each locomotive shall carry two pendent rods, about 6 inches long, moving freely on axes, and acting on triggers. These triggers release two rods, connected with levers which open their respective valves. One sounds an alarm whistle; the other admits steam to a piston, in a small cylinder, whose action causes the lever of a throttle-valve to shut off the steam in the dome of the engine. The piston-rod of this small cylinder, at the same time that it shuts the throttle-valve, applies a lever-break to the wheels of the locomotive. This action also registers such to have been effected mechanically which the vigilance of the driver, under ordinary circumstances, would have superseded by his obeying the signal some 200 yards before. The trigger-rods are acted upon by inclined planes of wood, placed parallel with the rails, and a few inches from them laterally. These inclines are about 4 feet long, having hinge-joints at one end, and are capable of an elevation of 4 or 5 inches at the other. This elevation from an horizontal position is, in general, produced by a partial rotation of a transverse spindle placed under the rails, and on which are fixed two cams, that, acting by pressure under the inclines, cause them to assume the elevation requisite. The rotation of the spindle is produced by a motion of the lever and wire-rope, which sets the distant signal; and the cams and lever on the spindle, together with weights for reaction, are so arranged as to cause an elevation or depression of the inclines in perfect accordance with the indication of the signal. It should be remarked, that when the driver shuts off the steam himself, in accordance with the signal, this action lifts out of gear the trigger-rod, which would otherwise come in contact with the inclines; and that he cannot apply his steam without having replaced the rod, which is liable to expose any neglect of signals.

TO INDIA AND BACK IN THREE MONTHS.—Lieutenant R. M. Taylor, of the 25th Regt., embarked on board one of the Peninsular and Oriental steamers on the 20th October last, for Alexandria, and having hastened thence to Madras, remained there 12 days, when he returned and reached Southampton by the same steamer on the 25th ult.

BRITISH ELECTRIC TELEGRAPH COMPANY.—On Thursday the bill of the promoters of this undertaking was declared to have complied with the standing orders, the object being to incorporate a new company, for the purpose of telegraphic communication upon a more economical scale throughout the country, and for the purchase and use of patents. It is proposed that the capital of the company shall consist of 4000 shares of 25*l.* each, 5*l.* per share to be the greatest prescribed amount of call. The number of directors is not to exceed 12, nor to be less than three. The company are to have power to grant licenses, and to make arrangements for facilitating telegraphic communication with other countries. The telegraph is to be open to the use of the public "without favour or preference," at uniform charges; the scale of remuneration from Government to be fixed by the Board of Trade.

EXTENSION OF THE ELECTRIC TELEGRAPH.—The wires of the Electric Telegraph Company have been laid down to Windsor, along the South-Western Railway, for the accommodation of Her Majesty and His Royal Highness Prince Albert, who now can receive, at all hours, what is passing in both Houses of Parliament during the session, as also the events in the metropolis. The offices, 448, West Strand, near Charing-cross, are kept open night and day, for the convenience of those interested in parliamentary or legal affairs, for the transmission of expresses to the country, as the wires are laid down to upwards of 230 of the principal commercial and manufacturing towns in England, Wales, and Scotland, extending over more than 1500 miles of railway, besides a few short branches.

TELEGRAPHIC LINES IN CANADA.—The *Montreal Herald* announces that the line to Bytown is nearly completed, and a new cap, made of New Jersey clay, invented by Mr. Farney, has been used with great success:—The following is a list of the different lines in Canada:—Quebec and Halifax, 200 miles; Quebec and Toronto, 556: Toronto and Hamilton, 46; Montreal and Bytown, 120; Hamilton and London, 84; Niagara, 58; Chippewa, 15; Montreal and Troy, 52; total, 1131 miles.

THE ELECTRIC TELEGRAPH IN PARIS.—The *Journal des Débats* contains the following:—"The Minister of the Interior had presented a bill for the establishment of three lines of telegraphic communication by electricity, from Tonnerre, from Havre, and from Angers—the cost of which he estimated at 685,665 fr. The committee appointed to examine the project, proposes, in addition to the above lines, the establishment of four others—viz.: from Chalons-sur-Marne, Nevers, Châteauroux, and Dunkirk. The Minister came to an understanding on the subject with the committee, who, after rectifying the estimates, have come to the conclusion that a sum of 900,637 fr. would suffice for the construction of the seven new lines. The reporter, M. Leverrier, caused the result of his labours to be distributed to the Assembly. After giving a historical sketch of the system of telegraphic communication generally, he investigates the various systems and apparatus adopted for the electric telegraph. The committee having desired to ascertain the rapidity with which a correspondence could be carried on by this means, caused experiments to be made in their presence. The greatest speed which was attained under their inspection was 87 letters in a minute; but the reading then became difficult, and frequently even impossible. The telegraphic dispatches of the Government are conveyed alphabetically at the rate of 75 letters per minute. The committee is convinced that the security of the electrical telegraph is satisfactorily established. The transmission through Paris, which is indispensable, if the dispatches are to reach the Minister of the Interior directly, alone inspires any serious apprehension in the case of a disturbance of the public order in some portion of the capital; but, in that event, the Government would only have to transfer, for the moment, the starting points of the correspondence to the stations of the railways themselves upon which the telegraphs are established."

THE SUB-MARINE TELEGRAPH.—The *Presse* devotes more than two columns to the details connected with the project of a sub-marine electric telegraph between France and England, for which Mr. Brett has obtained a privilege of 10 years from the French Government. It appears from this account that the contract binds Mr. Brett to have his telegraph completed by the 1st September next, but the French Government reserves to itself the right of stopping the works before the 1st of September, in the event of circumstances occurring to render this measure indispensable. A joint-stock company, under the name of Brett, Toche, and Co., the seat of which is to be Paris, has been formed with a capital of 750,000 f., but Mr. Brett undertakes to complete the telegraph across the Channel for 459,000 f. The two points fixed upon are Cape Grisnez, near Calais, and the Shakespeare Cliff, near Dover. The distance between these points is only 18 miles English, but the line of telegraph, consisting of seven wires properly covered, is to be 23 miles, to allow of oscillation.

THE TELEKOUPHONON, OR SPEAKING TELEGRAPH, has, during the last 12 months, come into very general use. In several of the largest buildings which have recently been erected in London, Mr. Whishaw's useful invention has been considered a necessary appendage, and is now introduced in the specifications issuing from the offices of some of the most eminent architects of the day. Besides the numerous public buildings into which it has been introduced, it is about to be fitted-up throughout the Earl of Ellesmere's splendid mansion, under the direction of Mr. Barry. It is now nearly two years since Mr. Whishaw first applied it, in private houses, as a most efficient substitute for bells.

GUTTA PERCHA.—The importation of this now exceedingly useful and important article of merchandise continues to take place in very considerable quantities. The vessel *Justina*, from the Cape of Good Hope and Singapore, has brought 11,593 blocks, besides a quantity in bags, of the article; and the vessel *Enterprise*, has also brought 9458 blocks of the article, consigned to order.

STRENGTH OF GUTTA PERCHA TUBING.—A trial of the strength of gutta percha tubing took place, a few days ago, at Stirling, in the presence of a committee of the town council, with a view to its applicability for extinguishing fires, flusing drains, &c. The tubing, which was 1½ in. bore, was attached to the water-pipes; and although the pressure of the water is, perhaps, the greatest in the kingdom (being about 450 feet), not the slightest effect could be perceived upon either the tubing or the joints, whilst the same pressure upon strong leather hose scattered the rivets in all directions.

BRIGHTON, LEWES, AND TUNBRIDGE WELLS RAILWAY.—On Saturday, Master Sir William Horne proceeded with the list of shareholders in this undertaking, and placed thereon as contributories, liable to a *pro rata* payment in discharge of the liabilities, amounting to 5000*l.*, 1100 shareholders, who had applied for shares and had them allotted, but who had neither paid the deposit nor signed the deed of contract.

TRING, READING, AND BASINGSTOKE RAILWAY.—On Saturday, Master Richards declared a distribution of 10s. per share among the shareholders out of the assets accruing from the winding-up of the company's affairs. A further return is expected.

DIRECT WEST-END AND CROYDON RAILWAY.—On Monday and Tuesday a protracted argument took place in the winding-up of this company's affairs before Master Tinney. The court was inconveniently crowded with persons desirous of excusing themselves as contributories, the question in discussion being a controversy between two classes of the shareholders, class 1 consisting of the provisional committee of the undertaking, and who, by their counsel, were desirous of getting class 2—consisting of persons who had shares allotted them, but who, on payment of 2s. 6d. per share, received back their letters of allotment—held liable with themselves to become contributories for defraying outstanding liabilities. The Master gave no decision beyond an intimation that it might not be necessary to hear counsel for class 1, and adjourned for 14 days.

NORTH KENT RAILWAY CONTINUATION.—The case of the promoters of this bill was further gone into on Tuesday, by the Examiner on Standing Orders as to compliance with standing orders, and a few allegations of non-compliance, of no material character, were sustained. Evidence was tendered by the promoters, and numerous letters were put in from persons whose names had been improperly used to get up a factious opposition by the agents of the South-Eastern Company. Some of the writers stated that their names had not only been used in the memorials under consideration without their authority, but contrary to their wishes; and that, so far from being opponents to the measure, they were supporters of it, because it was universally desired by the inhabitants of Kent, and by the public in general.

PARAGON PAINT COMPANY.—In the *Mining Journal* of Sept. 8th last, we noticed that a prospectus had issued for the formation of a company for the carrying out a patent which had been obtained for a newly-discovered material to be used as paint, and which the inventor termed "Paragon Paint." A committee of persons connected with the trade met about that period to discuss the merits of the invention, and enter into a practical investigation of its properties, by having boards, new and previously painted, covered with several coats of the paragon paint, and others with lead colours, when they came to the conclusion that it had no offensive smell, as paint in general use has; that it gives a body quite equal to white lead, and that it works more freely. Since these results were arrived at, the company has been formed, and the paint brought into practical operation, with the most complete success. The Whittington Club had their reading-room painted with the new paint, with a flatted surface of light fawn, and the cornice picked out with other suitable colours; this was completed on Monday evening, the 14th Jan., and on the next evening the annual *soirée* took place, when about 800 persons promenading therein, when, notwithstanding the crowded state of the room, and the heat of the gas-lights, not the least effluvia was evident, nor was a single complaint made to such effect—a strong proof that the paint possesses the properties ascribed to it. We have since visited the apartment, and were quite pleased with the general effect; the groundwork is well covered, the colours chaste and mellow, and the flatted surface homogeneous, and possessing a dead bloom, equal to any turpentine and lead colour generally used for that purpose. When dirty, this paint can be cleaned equal to new; it covers a greater surface, weight for weight, than lead colours; and not the least advantage is that, by its use, painters will avoid those dreadful maladies to which so many hundreds have fallen victims from the continual employment of the salts of lead.

FRANKLIN COXWORTHY'S DISCOVERIES IN NATURAL PHILOSOPHY.—No. XVI.

The highly electrical condition of the surrounding regions, having been proved in our preceding paper, we have now to consider what is the electrical condition of the atmosphere in which we move, by comparison with that of the crust of the globe on which we stand; and, however unimportant this inquiry may at first appear, we shall be able to show that to these relative conditions are referable not only epidemic complaints, but the quantity of vegetable productiveness.

For the proper action of an ordinary electrical machine, it is necessary to connect, by a chain or other conducting medium, the silk rubber with the ground; which fact induced the belief that the earth was the emporium of electricity. Franklin Coxworthy, however, came to another conclusion. Reasoning on what must be the naturally electrical condition of the earth, from its heated interior, and inferring that the highly electrical condition of the surrounding regions could not fail of imparting to the intervening atmosphere a certain amount of electricity, he came to the conclusion that the atmosphere must be positively electrical with reference to the crust of the globe; and that the chain of an electrical machine became a ready conductor of the fluid to the earth, because it was thus in connection with a medium that presented an extended surface to the atmosphere. To satisfy himself on this point, he constructed a novel apparatus, the action of which, whilst it satisfied him of his being right with reference to what we have premised, revealed to him a secret, the discovery of which he had never contemplated. Its importance will be apparent in the following propositions; the last of which, being obviously new, has nothing opposed to it

OLD DOCTRINE.	NEW DOCTRINES.
That the earth is the emporium of electricity.	That the atmosphere in which we move, as compared with the earth, is positively electric; the condition, however, alternating at times.
	AND
	That epidemic diseases are mainly referable to those changes of electrical condition in the earth and the atmosphere.

Thus differing with the scientific world, Franklin Coxworthy conceived that, as electricity induces evaporation, if he placed in two vessels of the same size, and in every other respect precisely alike, an equal quantity of water, and that, insulating one of these vessels from the earth, he connected the other, electrically, with the earth, he should procure evidence in favour of his assumption, as actually resulted.

For the required experiments, he has used vessels 7½ in. in diameter, containing each about 32 ozs. of water. They are suspended under a lean-to, on the north side of a wall; are protected from the sun, wind, and rain; and are about 14 ft. from the ground, with which the non-insulated vessel is electrically connected by a stout copper wire; and the following statement will show the relatively electrical condition of the earth and the atmosphere from 1845 to 1849 inclusive—the "insulated" column indicating the electrical condition of the atmosphere, in which an excess of evaporation produces a healthy state of the animal kingdom; and the "non-insulated" column representing the excess of evaporation reversely with the other, and indicating a favourable state of the vegetable kingdom:—

Date.	1845.		1846.		1847.		1848.		1849.	
	Insulated.	Non Insulated.	Insulated.	Non Insulated.	Insulated.	Non Insulated.	Insulated.	Non Insulated.	Insulated.	Non Insulated.
January	The vessels or scales were first filled Oct. 10, 1845.	—	—	270	115	140	40	325	170	90
February		—	—	70	280	105	100	55	125	155
March		—	365	33	370	130	145	170	175	200
April		—	215	75	195	195	60	295	20	515
May		—	310	345	225	185	240	275	60	695
June		—	445	460	200	175	425	145	65	660
July		—	900	100	215	225	335	175	455	235
August		—	245	35	355	65	340	65	295	150
September		—	225	120	345	65	105	180	65	205
October	960	—	280	145	150	275	310	145	130	280
November		—	130	195	90	290	140	95	—	—
December		—	245	135	80	320	160	150	—	—
Grains	960	—	3360	1983	2620	2170	2400	2075	1560	3185
Mortality per cent.	2·379		2·379		2·782		2·662		2·803	

This apparatus he examined, at first, about every 10 days; and the excess of evaporation from the insulated vessel at the termination of the first year confirming him in his belief in the correctness of the primary object of examination, he was about to discontinue the experiment; but, fortunately, the sudden change he observed in the beginning of 1846 induced him to prosecute the investigation; and thus continuing throughout January, February, and March, the value of the apparatus, as a meteorological instrument, became apparent to him. Its further importance, with reference to animal health, was not then even contemplated.

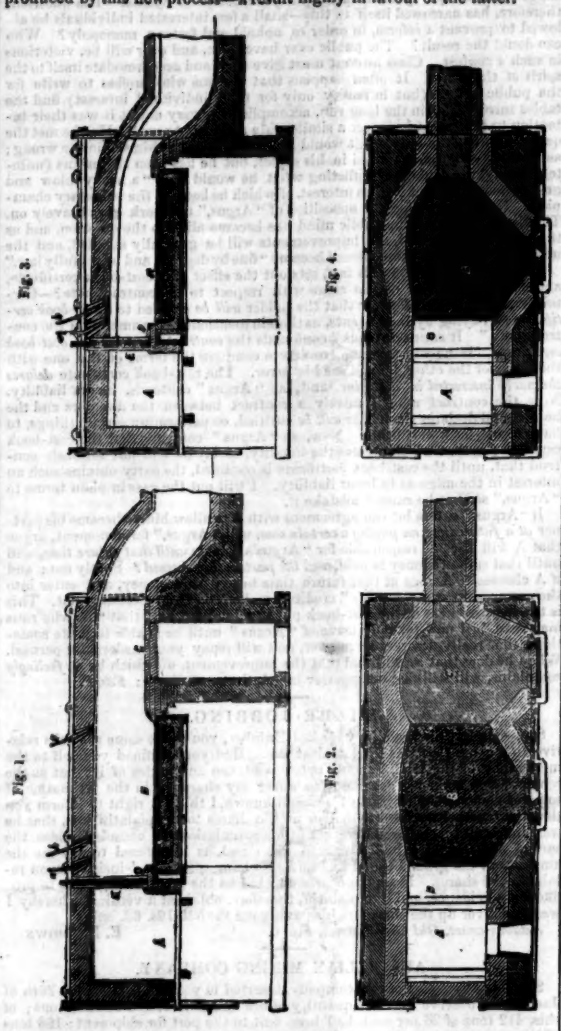
We have no record of the electrical condition of the atmosphere throughout 1845; but there is no reason for believing that it would have differed from that of the succeeding year. Assuming this, we have first to direct the attention of the reader to the singular coincidence of apparent cause and effect between the results given by the apparatus, and those derived from the returns of the Registrar General, showing the per centage of mortality. It will also, upon a close analysis, be observed that, in August and September, 1847, when we experienced such very healthy weather, there was a large excess of evaporation from the insulated vessel—the atmospheric witness—but that, towards the close of the year, when the influenza made its appearance, an immediately opposite conditon was manifested, upon the not less conclusive evidence of the vessel electrically connected with the earth; and this condition continued until May, 1848, when the disease abated. On reference to 1849, it will be noticed that, in April, May, and June, the atmosphere was prominently negative; and about the end of that month the cholera made its appearance, gradually increasing throughout June. In the first 10 days of July, however, when the atmosphere became highly electrical, and to which period is referable all the excess in the insulated column of that month, the disease received a temporary check. Then, when another alteration occurred, as the positions in the respective columns demonstrate, the cholera raged more freely until September, when it reached its height.

Our next paper, concluding this particular examination, will also terminate the series.—S.: *Cheltenham Journal.*

FLOATING RAILWAY ACROSS THE FORTH.—We have to notice the completion of an undertaking which will not only be of great public advantage, but will add very materially to the prosperity of the Edinburgh, Perth, and Dundee Railway Company. We allude to the large moveable slips that have been erected by this enterprising company at Granton and Burntisland, by means of which they will, in connection with their large floating railway steamer *Leviathan*, be enabled to give great facilities in the transmission of their traffic. Coals, minerals, and live stock will now be conveyed across the ferry without change from the trucks; and, if found necessary, passengers could also, with great ease and safety, be taken across without change of carriage; thus, in fact, establishing a continuous line of railway from London to Aberdeen by this route. The first experimental trial took place on Wednesday last in presence of the directors, and was eminently successful. The spacious deck of the steamer is capable of holding a train of from 30 to 40 loaded trucks; and on Wednesday 12 trucks, consisting of coals and general merchandise, were placed on board at Burntisland in about 7 minutes. The time occupied by the steamer in crossing was 25 minutes; and the trucks were safely run ashore at Granton in the course of 3 minutes afterwards, amidst the hearty cheers of a large concourse of spectators, who had assembled to witness the interesting proceedings. We may give a description of the entire apparatus: Alongside the piers at Burntisland and Granton is an incline or slip, constructed of masonry, upon which are laid two lines of rails, the same gauge as the main line. The incline is placed a heavy moveable platform, 61 feet in length, by 21 feet in breadth, framed of timber, and resting upon 16 wheels. To the front of the platform are attached, by means of universal joints, four malleable iron girders, 35 feet long, constructed of boiler plate, spanning the requisite distance between the platform to the vessel, and affording sufficient depth of water for the bottom of the vessel to clear the surface of the slip. These girders are raised and lowered on the arrival and departure of the vessel by means of a winch on the top of a staging, 18 feet high, erected across the platform. The whole platform, with the girders, are raised and lowered to suit the several heights of the tide, by means of a small stationary steam-engine, which is also employed in moving the trucks off and on board the vessel. The drums and gearing in connection therewith are so arranged as to work the platform, or load and discharge the vessel with the greatest facility. The large vessel or floating pier (*Leviathan*) plying in connection with the slips, is 175 feet long by 40 feet over all, propelled by two powerful engines of peculiar construction, the paddle shafts unconnected. Upon her deck are laid three lines of railway for the standage of trucks.—*Scotsman.*

IMPROVEMENTS IN THE PUDDLING FURNACE.

In a former Journal we gave the specification of a patent obtained by Mr. Reuben Plant, of Holly Hall, for improvements in the puddling furnace and manufacture of iron, in which, however, as there were one or two trifling inaccuracies, and we have since received some further communications, fully appreciating the importance of the principle, we again refer to the subject, and insert four other diagrams, which, on reference to the description in the *Mining Journal*, will render the whole arrangement thoroughly intelligible. We have already alluded to Mr. Plant's connection and standing, and which it is unnecessary now to repeat, he being well known in the trade. It is, we believe, Mr. Plant's intention to grant licenses to others, and not to work the patent himself. The saving of fuel will be very considerable, and one of these patent furnaces will do the work of two of the old description—in which the means adopted of conveying the air to the coal, destroys double the quantity, at least, which is consumed by this patented arrangement. We would call attention to the communication of a practical iron manufacturer, in last week's Journal, on the subject, which takes a general and highly favourable view of its merits; and among those who have, in this early stage, experimented with this new furnace, Messrs. Williams and Co., of the Wellington Iron-works, near Stourbridge, in a testimonial furnished by them, say—"We like your patent furnace as far as we have tested it. It is clearly the means of saving fuel, and making the quality of the iron better. We know of no other way in which a heat of iron can be made in one hour, and with so little fuel." The usual time is 1½ hours at least, and the iron produced inferior to that produced by this new process—a result highly in favour of the latter.



[We are indebted for these cuts to our contemporary, the *Mechanics' Magazine.*]

MR. PLANT'S PATENT FOR THE IMPROVEMENTS IN THE MANUFACTURE OF BAR AND WROUGHT IRON.—In the *Mechanics' Magazine* we find a specification of a patent for improvements in these branches of manufacture, granted to Mr. Reuben Plant, of Holly Hall, near Dudley, whom we congratulate on the result of his persevering and repeated experiments. We have no doubt, from the scientific knowledge which Mr. Plant has already displayed, and the untiring energy exhibited in his endeavours to complete and perfect the present invention, that this will prove as successful as his other undertakings, and that no efforts will be wanting on the part of the patentee to fully develope its true worth to manufacturers and the public. As far as we see of Mr. Plant's patent, it is a new mode of supplying blast and steam in the puddling furnace. The old process hitherto employed by the ironmasters has been to blow the fire, and when steam has been applied it has been used to increase heat. Mr. Plant, on the contrary, takes them conjointly, and in the descriptive part of his specification he has clearly pointed out the manner in which he uses these important elements—blast and steam—so as to render the application very easy to be understood and adopted. Our own view of the case is this: that the blast driven into the furnace, as Mr. Plant proposes, must have two very important effects—it must increase the heat to more than 10 times what it would be without it (in fact, it is the hydro-oxygen blow-pipe), and by blowing into and upon the surface of the iron, must go far to carry off the injurious gases, which have been the subject of so much complaint to ironmasters, as being detrimental to the finished iron; and, by the mode of applying the steam which this gentleman has adopted to lower the heat of the furnace, this part of the work is well finished, the iron being decarbonised by the process, at the same time receiving fibre. It is, truly, a new application of these powerful agents, and one which, we have no doubt, will prove a great source of profit and advantage to the trade and saving to the country. Mr. Plant, who is fruitful in inventions, has been the means of giving to the inhabitants of Brierley-hill a cheap, efficient, and pure light, in the place of a scanty and impure one at an exorbitant rate (we believe the reduction he has effected in gas is from 8s. 4d. to 5s. per 1000 feet); and we trust the present invention will enable the ironmasters to give us good and cheap iron, in proportion with the great saving of time and fuel, which will necessarily result from its general adoption. The damper E in the specification appears to us a very clever and ingenious contrivance, and, apparently, is of great importance in regulating the heat in the puddling furnace. We heartily wish the patentee abundant success in his new undertaking.—*Birmingham Mercury.*

MARBLE TILES.—The vessel, *Orion*, arrived from Leghorn, has brought, as a portion of a general cargo, nearly 5000 marble tiles, the produce and manufacture of the Italian States. The vessel in which this importation took place belonged to Holland, and therefore this is an instance in which a Dutch vessel has been employed in bringing an Italian cargo to this country for home use, which would not have been allowable until the repeal of the navigation and importation laws came into operation.

SUPPLY OF FIFE COAL TO EDINBURGH.—On the 30th Jan., one of the new barges built by the Edinburgh, Perth, and Dundee Railway Company, for the conveyance of goods and coal from Burntisland to Granton, crossed the ferry there for the first time, having on board several trucks of Mr. Spowart's celebrated Wellwood coal for use in Edinburgh. The inhabitants of Edinburgh will now receive a supply of the finest coal in the market, with all the advantages of a saving of breakage, and the facility and cheapness of railway carriage, the Dunfermline branch being in full operation to its western extremity, and connected with the well-known and valuable coal-field there.—*Scotsman.*

A late Philadelphia paper describes a large brass rudder, just completed in that city for the steam-ship *Columbia*, of New York, 16 feet long, 3 feet 3 in. wide in the blade, and weighing nearly 3000 lbs.

LONDON AND WATFORD SPRING WATER COMPANY.—On Tuesday the promoters of this measure were declared to have complied with the standing orders.

HUMBOLDT'S "VIEWS OF NATURE."

The writings of that great admirer of Nature in her most sublime forms, an under all her more intensely interesting variety of circumstances, Alexander Von Humboldt, have ever made the most lively impression upon minds formed for a just appreciation of natural phenomena, of the powers of language, and the beauties of composition. It is now nearly four years since we noticed the republication of his *Cosmos*, by Mr. Bohn, of York-street, Covent-garden, and we now have the pleasure of perusing a third edition of his *Views of Nature*, or contemplation of the sublime phenomena of creation by the same author.* The first edition of this masterly work, which no intellectual reader can peruse without intense interest and considerable instruction, was published 43 years since; a second was given to the world in 1826, and the present edition has been carefully revised and considerably increased by an essay on volcanos, and the Plateau of Caxamarca. The work, as its title would import, is a vivid description of those natural phenomena which take place in tropical climates, more particularly in South America; and as we follow the author through his beautiful episodes and florid language, we can almost fancy ourselves on the margin of some Amazonian river, or buried deep in the solitude of primeval forests and prairies, surrounded with wild horses, buffaloes, rattle-snakes, and boa-constrictors. The first division of the volume is a description of the steppes and deserts of Asia, Africa, and America; then follows the mountain chains of Asia, the cataracts of the Orinoco, nocturnal lives of animals in the primeval forests, the physiognomy of plants, and the concluding chapter is one on the structure and mode of action of volcanos in different parts of the earth. Every difficult passage, or local sentence in these several essays is liberally illustrated, and commented on at the end of each section, and there is a copious index by which reference may at once be made to any of those soul-stirring pictures of tropical, mountain, and electrical phenomena, which the author knows so well how to paint. As it is out of our power to add to the beauties of the work, by any more elaborate details of its contents, we shall conclude with a few extracts, and thus allow its author to speak for himself. Speaking of the appearances of those boundless plains, called "steppes," he says:—

When the traveller turns from the Alpine valleys of Caracas, and the island-studded lake of Tacarigua, whose waters reflect the forms of the neighbouring bananas—when he leaves the fields verdant with the light and tender green of the Tahitian sugar-cane, or the sombre shade of the cacoa groves—his eye rests in the south on steppes, whose seeming elevations disappear in the distant horizon. From the rich luxuriance of organic life the astonished traveller suddenly finds himself on the dreary margin of a treeless waste. Nor hill, nor cliff rears its head, like an island in the ocean above the boundless plain; only here and there broken strata of floetz, extending over a surface of 900 square miles (more than 3600 English square miles), appear sensibly higher than the surrounding district. The natives term them *banks*, as if the spirit of language would convey some record of that ancient condition of the world when these elevations formed the shoals, and the steppes themselves the bottom, of some vast inland sea. Even now illusion often recals, in the obscurity of night, these images of a former age; for when the guiding constellations illumine the margin of the plain with their rapidly rising and setting beams, or when their flickering forms are reflected in the lower stratum of undulating vapour, a shoreless ocean seems spread before us. Like a limitless expanse of waters, the steppe fills the mind with a sense of the infinite, and the soul, freed from the sensuous impressions of space, expands with spiritual emotions of a higher order. But the aspect of the ocean, its bright surface diversified with rippling or gently swelling waves, is productive of pleasurable sensations; while the steppe lies stretched before us, cold and monotonous, like the naked stony crust of some desolate planet. In all latitudes Nature presents the phenomenon of these vast plains, and each has some peculiar character or physiognomy, determined by diversity of soil and climate, and by elevation above the level of the sea. In northern Europe the heaths which, covered by one sole form of vegetation, to the exclusion of all others, extend from the extremity of Jutland to the mouth of the Scheldt, may be regarded as true steppes. They are, however, both hilly, and of very inconsiderable extent, when compared with the Llanos and Pampas of South America, or even with the prairies on the Missouri and Copper river, the resort of the shaggy bison and the small musk ox. The plains in the interior of Africa present a grander and more imposing spectacle. Like the wide expanse of the Pacific, they have remained unexplored until recent times. They are portions of a sea of sand, which, towards the east, separates fruitful regions from each other, or encloses them like islands, as the desert near the basaltic mountains of Harudsch, where, in the Oasis of Siwah, rich in date trees, the ruins of the temple of Ammon indicate the venerable seat of early civilisation. Neither dew nor rain refreshes these barren wastes, or unfolds the germs of vegetation within the glowing depths of the earth, for everywhere rising columns of hot air dissolve the vapours, and disperse the passing clouds. Wherever the desert approaches the Atlantic Ocean, as between Wadi Nun and the White Cape, the moist sea air rushes in to fill the vacuum caused by those vertically ascending currents of air. The navigator, in steering towards the mouth of the River Gambia, through a sea thickly carpeted with weeds, infers, by the sudden cessation of the tropical east wind, that he is near the far-spreading and radiating sandy desert.

In his description of the cataracts of the Orinoco, M. Humboldt thus describes those extraordinary phenomena, the black waters, which have been so perplexing to numerous philosophers:—

In the upper portion of this fluvial district, between 3° and 4° north lat., Nature has exhibited, at many different points, the puzzling phenomenon of the so-called *black waters*. The Atabapo, whose banks are adorned with *Carolinias* and arborescent *Melastomas*, the Temi, Tuamini, and Guainia, are all rivers of a brown or coffee colour, which, under the deep shade of the palms, assumes a blackish inky tint. When placed in a transparent vessel, the water appears of a golden yellow colour. These black streams reflect the images of the southern stars with the most remarkable clearness. Where the waters flow gently they afford the astronomer, who is making observations with reflecting instruments, a most excellent artificial horizon. An absence of crocodiles as well as of fish—greater coolness—less torment from stinging mosquitoes—and salubrity of atmosphere, characterise the region of the black rivers. They probably owe their singular colour to a solution of carburetted hydrogen, to the rich luxuriance of tropical vegetation, and to the abundance of plants on the soil over which they flow. Indeed, I have observed that on the western declivity of the Chimborazo, towards the shores of the Pacific, the overflowing waters of the Rio de Guayaquil gradually assume a golden yellow, approaching to a coffee colour, after they have covered the meadows for several weeks.

We must conclude our notice of this interesting volume, by an extract from the author's description of Vesuvius during an eruption in 1822, when the enormous cone of scoriæ which crowned the mountain, and which was 426 ft. high, fell with an awful crash:—

Twenty-four hours after the fall of the cone of scoriæ, which was 426 feet high, and when the small but numerous streams of lava had flowed off, on the night between the 23d and 24th of October, there began a fiery eruption of ashes and rapilli, which continued uninterruptedly for 12 days, but was most violent during the first four days. During this period the explosions in the interior of the volcano were so loud, that the mere vibrations of the air caused the ceilings to crack in the palace of Portici, although no shocks of an earthquake were then or had previously been experienced. A remarkable phenomenon was observed in the neighbouring villages of Resina, Torre del Greco, Torre del' Annunziata, and Bosche Tre Case. Here the atmosphere was so completely saturated with ashes, that the whole region was enveloped in complete darkness during many hours in the middle of the day. The inhabitants were obliged to carry lanthorns with them through the streets, as is often done in Quito during the eruptions of Pichincha. Never had the flight of the inhabitants been more general, for lava streams are less dreaded even than an eruption of ashes—a phenomenon unknown here in any degree of intensity, and one which fills the imaginations of men with images of terror from the vague tradition of the manner in which Herculaneum, Pompeii, and Stabiæ were destroyed. The hot aqueous vapour which issued from the crater during the eruption, and diffused itself through the atmosphere, formed, on cooling, a dense cloud, which enveloped the column of ashes and fire, that rose to an elevation of between 9000 feet and 10,000 feet above the level of the sea. So sudden a condensation of vapour, and, as Gay Lussac has shown, the formation of the cloud itself tended to increase electric tension. Flashes of forked lightning darted in all directions from the column of ashes, while the rolling thunder might be clearly distinguished from the deep rumbling sounds within the volcano. In no other eruption had the play of the electric forces been so powerfully manifested as on this occasion. On the morning of the 26th of October the strange report was circulated that a stream of boiling water was gushing from the crater, and pouring down the cone of cinders. Monticelli, the zealous and learned observer of the volcano, soon perceived that this erroneous report originated in an optical illusion, and that the supposed stream of water was a great quantity of dry ashes, which issued, like drift sand, from a crevice in the highest margin of the crater. The long drought which had parched and desolated the fields before this eruption of Vesuvius was succeeded, towards the termination of the phenomenon, by a continued and violent rain, occasioned by the volcanic storm which we have just described. A similar phenomenon characterises the termination of an eruption in all zones of the earth. As the cone of cinders is usually wrapped in clouds at this period, and as the rain is poured forth with most violence near this portion of the volcano, streams of mud are generally observed to descend from the sides in all directions. The terrified peasant looks upon them as streams of water that rise from the interior of the volcano, and overflow the crater; while the deceived geologist believes that he can recognise in them either sea-water or muddy products of the volcano, the so-called *eruptions boueuses*; or, in the language of the old French systematisers, products of an ignes-aqueous liquefaction.

* "Views of Nature; or, Contemplations on the Sublime Phenomena of Creation: with Scientific Illustrations." By ALEXANDER VON HUMBOLDT. Translated from the German by E. C. Otté and Henry G. Bohn: with a frontispiece from a sketch by the author, a fac-simile of his handwriting, and a comprehensive index. London: Henry G. Bohn York-street, Covent-garden.

LITERARY NOTICE.

The Year Book of Facts in Science and Art: exhibiting the most important Discoveries and Improvements of the Past Year in Mechanics and the Useful Arts, Natural Philosophy, Electricity, Chemistry, &c. By JOHN TIMBS. London: David Bogue, Fleet-street.

The continual discoveries and improvements which are ever taking place in this age of scientific progress render this annual acquaintance particularly interesting; and the volume for 1850 lacks nothing of that allurement to the inquiring mind which has marked the previous ones as refreshers of the artistic occurrences of the past year, and a record of the advancement of the human mind. The contents are classified into the mechanical, useful, and decorative arts—natural philosophy, electrical science, chemical science, natural history, geology and physical geography, astronomy and meteorology, and an obituary of persons eminent in science and art who have departed this life in the year 1849. The volume, very appropriately, as the subject is just now occupying much public attention, opens with a memoir of Sir John Franklin, and illustrated with a well-executed portrait. A vignette of the High Level Bridge, Newcastle, decorates the title page, and a description is given in the letter-press. We have a continuation of the interesting proceedings at the Britannia Bridge from the previous year; and nothing in any way valuable to the arts, which has been made public during the previous 12 months, appears to have been omitted. The paper and type are good; and the little volume has been completed in the publisher's usual neat style.

EXETER AND CREDITON RAILWAY.—It appears that arrangements are being made for leasing this line to the Bristol and Exeter Company for a term of seven years, at a net rental equal to one-third of the gross receipts. It is expected that the line will be opened for the traffic early in April. About 30,000*l.* will have to be raised, for the purpose of completing the works.

ON THE PREVENTION OF ACCIDENTS IN COAL MINES.

We concluded our extracts from the report of the commissioners to inquire into the best means for the prevention of colliery explosions, with the evidence of Mr. NICHOLAS WOOD, in our last, and now proceed to that of W. W. SMYTH, Esq. This gentleman stated that he had for 10 years turned his attention to the subject of colliery ventilation, and had examined numerous collieries in the several districts of England, the Hartz, Saxony, Bohemia, Eastern Alps, Hungary, and Transylvania. In all the English districts there are some mines to be found worked consistently with all the modern improvements in ventilation, and are, generally speaking, safe; but there is a larger proportion in which these improvements have not been carried out, and where the men are every day working at great risk. These defects vary so much in different districts, that it was necessary to examine each separately. In South Wales there were many collieries where no artificial current of air was generated, and in some the natural current was very insufficient; in others the air is not sufficiently split, or divided, as it is in the northern collieries. It was quite evident valuable remedies might be applied, as Mr. SMYTH knew a colliery at Swansea, belonging to Mr. CHARLES SMITH, where, after numerous accidents, he employed a gentleman from the north, recommended by Mr. NICHOLAS WOOD, who produced a more powerful draft, improved the general system of management, and brought it to be perfectly pure and safe; no accident had occurred there since. The witness considered the "butty" system highly prejudicial to the well-being of the colliers; to avoid the expense which would be entailed in properly driving the air headings, according to agreement, they were very generally behind hand, and he had seen them 40 or 50 yards behind the hewers. In Lancashire, as compared with the north, or, perhaps, with Staffordshire, accidents were not so frequent; but there have been several serious explosions there in the course of a few years. He examined the two collieries of Ardsley Main and Darley Main after the explosions, and found "that, although the system of ventilation might not be amiss, its efficiency was impaired by not carrying it out in a proper manner. At Darley Main, for instance, it was evident at once—and I gave evidence before the coroner's inquest on the subject—that with the same shafts for upcast and downcast which they then had, and the same dimensions of furnace, they might easily pass double the quantity of air, by doubling the area of their air-ways; and having already headings which would have answered that purpose, they might have done so without going to increased expense, excepting a small additional quantity of fuel. Mr. LOCKE the viewer there, has since adopted this plan, and has written to Mr. WOOD, as that gentleman informs me, to say that double the quantity of air has been obtained. One great cause of the danger there has already been pointed out in the existence of the goaves, or gobs, as they call them there; but I believe that a better consideration of the subject of ventilation generally would enable them to be rendered less dangerous than they are at present. In the Ardsley Main, for instance, the explosion evidently came from one principal goaf, which abutted on the rise side against a fault. When gas accumulated in this goaf, as it must have done by continual drainage from different parts of the coal, it had no possible escape to the rise, but must accumulate till it could force its way out into the passages of the mine, through which many of the men were passing to and fro, and with naked candles. Now, if on the rise side of this a heading had been driven, to carry off the explosive gas as it accumulated, passing behind it, or to the south-west of it, at rather a higher level, but opening into it, and if it then could have been carried to the upcast shaft, it would at once have drained the goaf of all its explosive mixture, and carried it away harmlessly." Mr. SMYTH further said, he considered the "long wall" system, as adopted in Shropshire, is the most efficient method, and one which is liable to fewest accidents. It is efficient not only as guarding against accidents by falls of roof when the men are acquainted with properly fixing timber props, but it is applicable in many districts where it is at present unknown, or where, at all events, it is not used to the extent it might be. The working of the "long wall" plan is as follows:—

The shafts are sunk at the lower part of the field of coal to be worked, while a level, or pair of drifts, is driven out in each direction; and to the rise of these, commencing from the shafts, they begin to work away the coal in a long line, taking it in a "long wall," from which the term has been derived; and, as they go on, they leave from these shafts branching roads through the "gob," either rectangular or angular in their direction, according to circumstances, and leading to the body of coal, so that they are continually up to the face of the coal which the men are working. The whole of this is one long fresh face of coal, along which the men are distributed; and the roof in the immediate neighbourhood of it is supported by props in three or four rows, which as fast as the men advance in this direction are removed, and placed further forward, whilst the roof behind falls in, and would cut off the communication from thence to the shaft but for the roads, which are kept open by walling at the sides. These roads are made of all the refuse coal; and the roof which falls in are packed; and the roof between the roadways falls down so close, that no room is left for any gas to accumulate and form a dangerous goaf; and, after several years have elapsed, it is found that the space from which the coal—perhaps, 6 ft. thick—has been taken away, is often condensed into a few inches, so that there is no possibility of any dangerous reservoir of gas being formed; then, as another advantage, the air is taken at once from the downcast shaft, in one unbroken stream, right round the face of the working, and comes straight away to the upcast—thus obviating the expense and dangers of doors, stoppings and crossings. The consequence is, that however powerful the gas along this face of coal, it must be removed by so powerful a stream of air.

There is one point to which I should wish to direct the attention of the committee. I think it exceedingly desirable that a sufficient and spontaneous circulation of air should be attended to in placing the shafts, by putting the upcast shaft at a considerable distance from the downcast, and on the rise of the coal, inasmuch as, after an explosion has occurred, it is generally the case that we find nearly two-thirds of the men have been killed by the effects of the after-damp; and many of them are in positions where, if they had been able to get into a good airway, they would have been saved. Now, it is too frequently the case that the shafts are placed close together, and that a communication between them is at once opened by an explosion, and, consequently, the air passes down one and up the other, and the whole of the works are laid dead; whereas, if there were always a considerable length of air-course maintained, the men would know that by running along the different workings to this principal heading, they would always get air sufficient to sustain life. There always would be a natural ventilation carried on there; and, if the furnace plan should have been in use, the sides of the upcast shaft, supposing the furnace to be put out after the explosion, would retain a sufficient heat always to give the current an inclination in that direction; whilst if the mechanical means at the surface, or the steam-jet, should be employed, they might be still in action, and still carry on the required current.

Mr. PRICE STRUVE, of Swansea, said, in answer to some questions relative to his mine ventilator, that he thought it would be very difficult for accidents to occur at the Eaglesbush, or other colliery, where his apparatus was employed. A serious accident did occur previous to the erection of his ventilator. "On that occasion there was a large accumulation of gas in the old stalls, and the explosion took place in the far end, and that brought the whole of the fire-damp in these stalls in contact with this explosion somehow or other; and they had a second explosion, and it was of a very serious character. Most of the men who died were killed by the after-damp, and numbers of them were found along this level heading, trying to get out, but they were prevented by the waggons on the road; if the waggons had been away, numbers of them would have got out; the ventilation was destroyed. I believe there was no furnace whatever; I believe it was natural ventilation. Now, if my apparatus had been there, the same current of air would have continued along this level heading; it would not have been prevented there." Mr. STRUVE exhibited the following table:—

Estimate of the Amount of Ventilation, in cubic feet per minute, necessary for the safety of coal mines under different degrees of fire-damp; calculated with reference to the number of men employed. It is assumed in this calculation that 80 men and boys, on the average, exclusive of horses, are necessary to be employed in a mine, in order to obtain 100 tons of coal per day:—

Quantity of coal worked per day.	Quantity of coal worked per annum.	Men employed underground	Fiery, 300 cub. ft. per min. a man	Moderately, 150 cub. ft. per min. a man.	Small amount of fire-damp, 100 cub. ft. per min.
50 tons	15,000	40	12,000	6,000	4,000
100 „	30,000	80	24,000	12,000	8,000
150 „	45,000	120	36,000	18,000	12,000
200 „	60,000	160	48,000	24,000	16,000
300 „	90,000	240	72,000	36,000	24,000
400 „	120,000	320	96,000	48,000	32,000
600 „	180,000	400	120,000	60,000	40,000

He did not think there would be anything objectionable in establishing Government inspectors; there is a sort of inspection which exists at present on the part of the landlord, giving power to agents to enter numerous mines under the covenants of the leases, to see that they are worked properly, to inspect their plans, and take copies, which is not found of any practical inconvenience.

Mr. THOMAS EMERSON FORSTER was the next witness, and bore testimony to the good effects of Mr. GURNEY'S jets of high-pressure steam at the Seaton Delaval Colliery, and, as compared with the furnace, gave an increase of draft in favour of steam jets alone of 75 per cent. The relative expense and power of a furnace and steam jets were as follows:—A furnace to give 48,760 cubic feet of air per minute, costs, in erection, 212*l.* 10s. 6d., and annual expense in working it 267*l.* 10s. A boiler and jets, to give 85,690 cubic feet per minute, through the same workings, will cost 172*l.* 15s., and the annual expense 216*l.* 17s. 11d., the increase in the quantity being, in round numbers, 85,000 over 48,000. Mr. FORSTER observed that, considering the interruption which takes place from explosions, the expense incurred is always balanced by an improved mode of ventilation. An accident will cost 4000*l.* or 5000*l.*, besides the awful sacrifice of human life.

THE ABERDARE COLLIERS.—Mr. Crawshay Bailey's colliers having struck for wages, that gentleman declared he would suspend his works rather than accede to demands made in that way. His men were overcome by his firmness, and returned to their duty. The other colliers are still out, although wavering symptoms are discernible. Some of the masters have obtained colliers from other places. The "turn-outs" have been peaceable during the last few days. —*Swansea Herald.*

Original Correspondence.

WHAT IS, AND WHAT IS NOT, THE COST-BOOK SYSTEM?

SIR,—Your correspondent, "Argus," having admitted his inability to argue the question *he himself raised*, in reference to the recent improvements introduced by the West Polgooth Mining Company, and having shown, as I have, that those alterations are perfectly legal (and I am backed in this *opinion by legal authority*), I think the public have a right to be informed of the *motives* which must have induced "Argus" to have entered the field, from which he is obliged to retreat so ignominiously. The public are aware that a certain class of persons (no doubt highly respectable) obtain a livelihood by buying and selling shares in mines, and are termed shars-brokers. Their profit is a commission from the buyer and seller; and if any person is anxious to become a purchaser, or seller, he does so through one of these brokers, who gets his commission on the transaction. Now, it so happens that, by the recent alterations adopted by the Polgooth Company, the contract notes *pass by delivery, and no broker is required in the transaction.* This has given great offence to many of the brokers; they see that, if this system is adopted, "Othello's occupation" would be gone, and have expressed a determination, by all means in their power, to prevent its becoming general. I strongly suspect that "Argus" will turn out to be one of these interested parties, and I am strengthened in this opinion by the tenour of his letters. If I am mistaken, then I shall be happy to apologise to your correspondent; if I am right, the public will be able to judge of the *purity* of the motives which must have actuated "Argus" in rushing into print. The only parties I have heard express any doubt as to the alterations being improvements are these very interested individuals. On the contrary (and it may not be very agreeable news for "Argus"), I understand other companies are adopting the improvement, and the alterations have been submitted to counsel, who are of opinion that they are *perfectly legal, and do not in the least depart from the principle of the Cost-book System.* The question, therefore, has narrowed itself to this—shall a few interested individuals be allowed to prevent a reform, in order to uphold and foster a monopoly? Who can doubt the result? The public ever have been, and ever will be, victorious in such a contest. Class interest must give way, and accommodate itself to the spirit of the times. It often happens that persons who profess to write for the public welfare (but in reality only for their individual interest) find the tables turned, and, in the long run, accomplish the very object it was their intention to prevent. I suspect a similar fate awaits "Argus." Had he met the question fairly, the only result would have been to prove himself in the wrong; as it is, not only has he failed in his object, but he has been the means (unintentionally, no doubt) of inflicting what he would call "a heavy blow and great discouragement" to an interest, of which he became the voluntary champion. Notwithstanding the opposition of "Argus," the work goes bravely on. Thanks to "Argus," the public mind has become alive to the question, and as that becomes informed, the improvements will be generally adopted, and the monopoly to which I have referred become "fine by degrees, and beautifully less."

Your correspondent, in his last, sets out the effect of a cost-book certificate, and asks me if I will do the same with respect to the contract note?—Certainly. It is to the effect, "that the holder *will be* entitled to *a cost-book certificate* on paying by instalments, as therein mentioned, the amount in the contract note." It seems "Argus" confounds the *contract note* with the *cost-book certificate.* If he will take the trouble to compare the terms of the one with the terms of the other, he will see his error. The cost-book certificate *declares the party interested in the mine*, and, as "Argus" contends, incurs liability. Now, the contract note is merely a contract between the directors and the holder, and declares the holder *will be* entitled, on performing certain things, to have a cost-book certificate. Now, as "Argus" contends that the cost-book certificate is that which creates the liability, surely he will not seriously contend that, until the cost-book certificate is obtained, the party obtains such an interest in the mine as to incur liability. I will put the case in plain terms to "Argus," so that he cannot mistake it.

If "Argus" enters into an agreement with A to allow him to become his partner *at a future time, on paying a certain sum*, will "Argus," for a moment, argue that A will become responsible for "Argus's" debts *until that future time*, and until that sum of money is paid, *and the partnership formed?* Surely not; and if A chooses to decline at that future time to pay that money, and enter into the partnership, can "Argus's" creditors make A liable? Certainly not. This is the improvement in the cost-book put in a familiar way, that "he who runs may read." I now take my leave of "Argus" until he is able to write something that really deserves an answer, and will repay your readers for perusal. When he does that he will find that the improvement, of which he so *feelingly* complains, will still find a supporter in—A SHAREHOLDER: *Feb.* 8.

SHARE-JOBBING.

SIR,—Under this head, in your last Number, you make some remarks relative to a cause that was tried against me. Had you confined yourself to the mere report of the trial, I should not have taken any notice of it; but as the remarks you make are calculated to affect my character in the estimation of some of your readers to whom I am well known, I think it right to inform you that the reason I declined to deliver up the shares to the plaintiff was, that he was indebted to me for differences in his speculations in consols, besides the sum of 52*l.* 16s. 6d. I had advanced him; and, as he refused to pay me the amount, on the ground that I had no *legal* claim upon him, I insisted upon retaining the shares. From the course adopted on the trial, I was unable to produce any evidence, and the plaintiff, therefore, obtained a verdict, whereby I was to deliver up the shares on his paying me the 52*l.* 16s. 6d. only.

Adam's-court, Old Broad-street, Feb. 6. E. B. BROWN.

AUSTRALIAN MINING COMPANY.

SIR,—In the report of this company, inserted in your Journal of the 26th of January, I observe that the quantity of ore raised is stated at 1200 tons; of this, 412 tons of 26 per cent. had been sent to the port for shipment; 198 tons of the same per centage was lying at the mine; and 590 tons of 12 per cent. were reserved for smelting. I know not yet how far the erection of establishments for reducing the ores have progressed in South Australia, nor what facilities the company have for obtaining funds to carry on the exploration of their works; but I cannot conceive a more unwise plan than allowing others to obtain the large profits arising from the reduction of the richer ores, contenting themselves with the lesser, derived from the smelting of the poorer ores. Surely, if it is profitable to smelt ores at 12 per cent., it must be immeasurably more so to reduce those of 26 per cent., as they require less labour and fuel, and consequently are worked at a smaller cost. By reserving their richer ores, not only would the expense of transport overland, and freight by sea, be saved, but the numberless expenses to which the ores are subject on their arrival at Swansea. The high smelting charges have always weighed heavily on our home mining interest, and it appears that the colonial companies are inclined to allow the monopolists to lay the same intolerable burdens on them. The premiums thus given annually to the Swansea smelters, with the other charges, would, in the course of a few years, enable them to erect small smelting-works capable to reduce their produce, and the shareholders would receive the full benefit of that interest which they are now sharing with strangers.

Paddington, Feb. 5. A LOOKER-ON.

OLD VITIFER MINE, DARTMOOR.

SIR,—I was very much surprised to see a paragraph in your Journal of last week, under this head, stating that the agent of the above mine had been inciting his men, at a public-house, to fight, &c., on the previous Saturday, and that this was not a singular case, as your correspondent had heard of three or four similar ones recently; and adding that it was no wonder why more tin was not sent to market, as the men, consequent on such conduct, did not go to their work, and up to the day of your correspondent writing (Wednesday) the men were still idle. Having an interest in this mine, and somewhat interested in its direction, I immediately copied the paragraph alluded to, and forwarded it to Capt. Dunstan, requesting his immediate attention to it. I have to-day received his reply, a copy of which I beg to enclose you, and have no doubt you will oblige me by inserting it in this week's Journal. I beg to say that I have known Capt. Dunstan for some years, and I believe a more honourable, inoffensive, and temperate man cannot be found.—G. TRICKETT: *Plymouth, Feb.* 6

"DEAR SIR,—I am much obliged to you for your kindness, in informing me of a paragraph being in the *Mining Journal*, respecting a fight which took place at a public-house. I can assure you that the fight *did not take place with the Vitifer miners.* With respect to quelling the fight, I advised all those that worked in our mines to be sober, and not get into any quarrels, as they had been a long time out of work, in consequence of the severity of the weather, and that they *must* be at their places on Monday morning; they did as I directed them, and came to work as sober men *on the Monday morning.* With respect to raising more tin, I know that the quantity has been small, in consequence of the severe weather, and not by neglect of labour. If the correspondent had been here, there would have been less produced; and if he were so steady a man as Old Vitifer miners, he would not be requiring help so often to lift him out of the ditch; and if he were to mind his own business, it would be better for him, and those with whom he is connected, than to be dabbling about things that do not concern him, or that he knows nothing about.—RICHARD DUNSTAN: *Birch Tor, February* 8."

CAMBORNE CONSOLS.—In last week's *Mining Journal* we inserted a communication from Mr. Daniell, the agent at this mine, as to the correctness of the method pursued by him, in the preparatory reduction of the ores, and inviting an inspection of another parcel of specimens which he had forwarded to the London offices. The former part of the subject we leave to more practical parties; as to the latter we have availed ourselves of the opportunity of inspecting these fresh specimens, to the richness of which we can bear most impartial testimony; they contain still more compact masses of the filamental native silver, while a large portion of the body of the ore consists of the arseniates. The lode may, we think, be considered a true "silver" lode, being widely different to a silver-lead lode, or a copper lode *containing* silver—not a particle of either of the two former metals being found in the vein.

Mining Correspondence.

BRITISH MINES.

ALFRED CONSOLS.—Field's engine-shaft, sinking under the 60 fm. level, lode from 3½ to 5 ft. wide, producing 6 tons per fm. The lode in the rise over the 60 fm. level east is 2 ft. wide, yielding from 1 to 2 tons per fm., worth 8*l.* per fm.; the lode in the winze sinking over the rise is the same in quality as in the rise; I expect by Wednesday next the winze and rise will be communicated, after which we shall resume the driving of the 60 fm. level, and the 80 fm. level east. The lode in the 60 fm. level east is 3½ ft. wide, dressed with copper ore; the copper has held higher over the 60 fm. level than we expected. There is no change in any other part of the mine.

BARRISTOWN.—The lode in the 80 fm. level end west is at present producing good stones of ore, lode rather irregular, with large flookan, mixed also with lead; this end ought soon to come into the junction of the new lode, with the lode driven west, south of the engine-shaft, on the 24 fm. level. In the 30 fm. level end east the lode is improving, producing rather over 6 cwts. of lead per fm.; the [illegible] is producing about the same quantity of lead per fm. The lode in the [illegible] adit level is large, still producing a small quantity of lead. The men are progressing rather slowly in sinking Slob shaft under the 30 fm. level on account of the water; their contract is 5 fms., at 4*l.* per fm. We are through the branches intersected in the cross-cut south of Nangle's shaft, and at present in hard ground.

BEDFORD UNITED.—The engine-shaft is sunk 12 fms. 3 ft. under the bottom of the 103 fm. level; the men are now placed to drive eastward and cut ground for tip-plat; the 103 fm. level has been extended 4 fms. 1 ft. 6 in. eastward of the engine-shaft during the past month; the ground is easy for driving, and we expect to effect a communication with Burley's winze in the course of this month; the end, west of Burley's winze, has been extended 2 fms. 4 ft. 2 in., and is now under Crewe's winze. We have had to drive a few feet north to effect a communication with it, as the lode is divided at or about this point; the end, east of Burley's winze, has been driven 1 fm. 4 ft. 11 in. by the side of the lode; the men are now put to cut through the lode. The 90 fm. level has been extended 1 fm. 3 ft. 6 in. by the side of the lode; the ground is getting easier and more favourable; Crewe's winze, in the bottom of the 90 fathom level, is sumed, and set to six men, at 3*s.* 6*d.* in 1*l.* We have about 3 fms. to sink to reach the 103 fm. level; the lode in the bottom of it is worth 35*l.* per fathom. Bray's winze, also in the bottom of the 90 fm. level, is sunk 5 fms. below the level. The lode is not so productive as it was; but I believe the change will prove to be only temporary. In the 76 fm. level east there is no alteration in the ground; and the lode has not been taken down or cut into during the last month. The cross-cut north in the 47 fm. level continues to be in favourable ground. The pitches generally are producing a fair average quantity of ore; one in the back of the 90 is much improved, and now set at 4*s.* 6*d.* in 1*l.*, instead of 13*s.*; and one in the back of the 90 is reduced from 9*s.* to 5*s.* 6*d.* We have sufficient ore broken for our next sampling on the 1st March.

BODMIN CONSOLS.—The following report on this mine, by Capt. Spargo, dated Feb. 4, has been forwarded us for insertion:—I can assure you I am somewhat deceived in this district; I really thought in my way down that I should find nothing worth my notice; and to tell you the truth, I was rather inclined for it to be so, having a sett of my own to offer a part to you; and although I cannot say that the above mine at present can meet her cost, yet I am inclined to believe it is a fair speculation, worthy of your notice—therefore, I should act with dishonesty were I to persuade you not to have an interest in it. I can speak punctual on this point—that is, no practical man, without prejudice, can but highly recommend it. The lode in Pie's adit north is about 3 ft. wide, underlaying west about 2 ft. in a fathom; this end is now about 18 fms. from surface, entering a high hill; and, so far as Ilean judge, is driven about 40 fms. on the course of the lode, and some good stones of lead can be broken in different parts of this driving. The strata, to this depth, is very congenial for lead; and if this lode is not disordered by any uncongenial range that might occur from the rise of ground between the valleys, there is not a doubt on my mind but that it will turn out a profitable investment. I make this remark, because I frequently find deposits of this kind in a swell between two valleys, but at present there is nothing of the kind to be seen here. I had not time to minutely examine the dip of shelf, which is a general rule with me, as I find on it depends all future prospects—that is, whether the dip of the strata, when they fall together in deeper levels, are of one and the same composition; but I consider the prospects are quite sufficient to encourage any capitalist to embark here. I think about 20 fms. deep, under the adits now driving, will be a fair trial, as far as regards the strata; and as I before stated, that if the lode is not disordered by any invisible hard range, there is not the least doubt of its doing well. Hicks's adit, on the same lode, is driven about 30 fms.; the lode here is about 2 ft. wide, with a branch of lead now standing on the western part of the lode, very rich; still, I consider it not deep enough to expect much mineral, but the lode is very flattering. I should recommend to sink so as to see the lode to a greater depth, instead of driving shallow levels; of course, drive on Pie's adit, under the hill. There is another lode, about 60 fms. north of this, I should say well worthy of your notice, which is a large lode, but little done on it.

BWLCH CONSOLS.—The water is now about 12 ft. below the 31 fm. level in which four stopes are set west of the engine-shaft to 24 men, at 33*s.* per fm., being the same conditions as last setting, and which it was unnecessary to disturb, as the men have not worked a full month in them; I made arrangements for their suspension if frost overtook us, or if we found it otherwise necessary. We are also stoping away the arch under the 20 fm. level, east of the engine-shaft, at 16*s.* per fm. The only point of novelty in the mine is, that we find the ore ground going down under the 20, on the north side of the lode, although it had escaped discovery in two cross-cuts that we had driven into that side to seek it, it having been poor where the cross-cut penetrated this part of the lode; we may, however, be certain that a very large quantity of ore will have to come down from this lode, but it is not a feature that adds any new value to the mine, as it always has been taken into calculation in estimating the general yield of the vein. We have completed our standing pitwork to the 31 fm. level, where we have an 8-inch plunger fixed; this will save us something in cost and trouble, as drawing lifts are also more or less difficult to keep in working order. We have railroads through the principal thoroughfare underground, a good inclined plane to deliver the ore from the north of the sheet to the dressing floors, a good steam-engine, and very perfect crushing and pumping power, so that I do not see that it is possible to contrive anything more economical or effective for the future working of the mine, not taking into account the halvans, which will [illegible] 1000*l.* outlay, will give 1000*l.* a-year profit, but we must not think of this for the next 12 months or so. The cost in future can be kept low, and the returns will be proportionately large, leaving good profits, provided we are out of frost.

CARTHEW CONSOLS.—At the upper mine, we have commenced again driving the 65 fm. level end north, in which the lode shows very well, and is the only exception to, I might say, a general semblance of last week's report. At the lower mine the men have been the greater part of the week engaged in laying down a new piece of tramroad, and repairing the old.

COURT GRANGE.—The ore ground in the Pen-y-Cefn stopes continues as good as usual; in the western end the lode seems inclined to turn slightly to the northward, which has for the present lessened its produce. I have no doubt but that it will again improve; but, if not, this level has opened the prospects of very fair returns from the ground west of the engine-shaft. We have not yet reached the eastern ore ground near Oliver's shaft, which will greatly help us in the returns. I hope we shall get at the western end of it in two to three months' driving. We are now at work on both dressing-floors; and I hope, after the irregularity occasioned by the frost, that we shall be enabled to raise ore enough to leave a little profit, although what we can now dispose not to be taken as an index of the capabilities of the mine, as the western ore ground has been taken away as low, except a few fathoms, as the 30—giving us no chance in the direction. The ore at Oliver's shaft is not yet in a condition to be available, until the 30 fm. level is driven into it. At East Pen-y-Cefn, we have been enabled only to set 4 or 5 fms. in the ore. We have the wheel now ready, and are putting in the rods. The pumps are not yet arrived; but will be, no doubt, in a few days. At Letcynthen, the ore ground continues as good as usual; but as we have only a portion of the ore ground nearest the surface, it is but meagre in produce. In comparison with what we hope to great body will be. You will, therefore, see that the resources of the mines are as yet opened to but a little extent, and that the prospect before us promises large returns compared with anything that we can do at present, although very few mines make so much progress as we have made in so short a time.

EAST WHEAL GEORGE.—Since my last report, we have driven the [illegible] end 3 fms. 5 ft., the lode in the bottom of the level producing good stones of ore. We have suspended the end for a time, and put the men to lay open the lest, to bring water to the mine for the purposes of the engine and other machinery, and also for dressing the ores. We hope to accomplish this in the course of a week, and shall then proceed with our surface erections, cutting wheel-pit, &c., as we cannot go deeper on account of the coming water.

ESGAIR LLEE.—The north lode in the deep adit, east of the cross-cut, much the same as when last reported, 2 ft. wide, but poor. The lode in the winze below the 15 fm. level is looking promising, with good stones of ore, but not sufficient to set value on; the lode in the 12 fm. level east from surface is looking very kindly, and will yield, on an average, from 4 to 6 cwts. of ore per fathom. We have cut the caunter lode east of the cross-course in the deep adit east from the base of the hill, but it does not look quite as well as it did on the other side. The caunter lode in the stopes over the shallow adit, west of Morgan's winze, is looking kindly, and will yield, on an average, about 6 cwts. of ore per fm.

HAWKMOOR.—Our progress in the engine-shaft has not been so good as could have wished in the past month from increased water, owing to the late excessive rain; this difficulty is now overcome by larger lifts. I am happy to say the lode continues to look well—being from 2 to 3 ft. wide, and worth 30*l.* per fm. In the 10 fm. level east the lode will produce about 4 tons of ore per fm.; the capels, or [illegible] of the lode, is producing good work for tin; the lode in the stopes in the back of the adit is large, and yielding excellent work for tin. We are preparing a parcel of ore per cwts for the market.

HOLMBUSH.—The lode in the 120 fm. level south is 5 ft. wide, composed of quartz, prian, and stones of lead, letting down a great deal of water; we have assumed the stoping in the back of this level, which will produce 1½ ton of lead per fm. The ground in the 120 fm. level cross-cut south is very soft and favourable for exploring; being set at 2*l.* 15s. per fm., a month *stent*; 10 fms. 5 ft. were driven through last month, and more will be accomplished in the next, should the ground continue. The lode in the 110 fm. level south is 18 in. wide, composed of soft spar, killas, spots and small strings of lead; there is a great deal of water opening from the western side of the level, which circumstance has induced us to commence a cross-cut in that direction to intersect the flookan part of the lode, from which we believe the water flows; and, as the lode on the eastern part above-mentioned has been comparatively poor for several fathoms, it is possible the western or flookan part of the lode (so called) may be found the most productive part at this point; at all events, we think it judicious to prove it by such a cross-cut. The flap-jack lode, in the 100 fm. level, east of the great cross-course, is 2 ft. wide, composed of spar, mundic, and copper ore, producing 1½ ton of the latter per fathom, and promising a further improvement.

KIRKCUDBRIGHTSHIRE.—The lode in the 62 end, west of Stewart's, is 2 ft. wide, with spots of ore; the lode in the 62 end, east and west of Keith's, is still productive; the ground in the west end is softening a little. We have put the [illegible] the 50 end, west of Keith's, to rise in the back of the level, in order to communicate with the level above (40), as the lode is very wet for sinking; they have a good branch of ore, yielding half a ton to the fathom, and a fine open lode. We have engaged a [illegible] another cargo of lead ore.

SOUTH WALES MINES.—The south or Frongoch lode, in the deep east of the Rhydnet river, is looking more kindly than when last reported on, being mundic, more soft spar, and a little more lead, and, judging from its general character I think, ere long, it will prove to be a very productive lode. In my last report I informed you I had put four of the winzemen to open the old workings on the back lode, about 200 fms. east of the present workings; and in removing the rubbish we opened on a short length of the lode, which is 7 or 8 feet wide, with a leader of from 1 to 2 in. wide, and has a very promising appearance, and, I think, by the end of this week, we shall finish clearing out the whole of the old workings. I suppose

has not been such a flood known in Wales during the last 35 years as we have had in the past week, and immense damage has been done by it.

SOUTH WHEAL TRELAWNY.—We are driving both cross-cuts east and west of the engine-shaft in the 50 fm. level with six men in each cross-cut, with ground favourable, and also composed of a deep blue killas strata. Things are in a regular course of working order.

TRELAWNY.—In the 82 end, north of Phillips's shaft, the lode is 3 ft. wide, worth 13*l.* per fm.; in the same level, south of ditto, the lode is 3 ft. wide, worth 4*l.* per fm. In the 72, north of ditto, the lode is 2 ft. wide, worth 8*l.* per fm. In the 62, north of ditto, the lode is 3½ ft. wide, worth 18*l.* per fm. Trelawny's shaft is still in favourable stratum, and is now down 34½ fathoms below the 82 fm. level. We have not yet cut through the capels of the lode in the 82 fm. level; but hope to do so shortly. In the 72, north of Trelawny's shaft, the lode is 2½ ft. wide, worth 9*l.* per fm.; in the same level, south of ditto, the lode is 3 feet wide, worth 8*l.* per fathom. At the north mine, in the S. A. north of Trethiana, there is no change since our last report. In the 40 end, north of south's shaft, the lode is about 2 ft. wide, worth 7*l.* per fm. The winze in the bottom of the 30, north of ditto, is suspended for the present in consequence of water; the stopes throughout the same still look favourable. We sold, on Saturday last, a parcel of lead ores, computed 96 tons, at 18*l.* 15s. per ton, and 42 tons at 6*l.* 6s. 6d. per ton.

TRELEIGH CONSOLS.—In the 100, west of Garden's, lode 3 ft. wide, with stones of ore. In the 90, west of ditto, lode 2 ft. wide, with good stones of ore. In the 80, west of cross-cut, on the north part, lode 18 in. wide, worth 2*l.* per fm.; in the 80, west of ditto, on the south part, lode 18 in. wide, with stones of ore. In the 70, west of Garden's, lode 2 ft. wide, worth 7*l.* per fm. At Wheal Parent, the engine-shaft below the 40 is sinking in the country. The 40 cross-cut, south of ditto, is driving towards the middle lode; the 40, east of ditto, lode 18 in. wide, worth 3*l.* per fm. The 30, east of ditto, lode 20 in. wide, worth 3*l.* per fm.

WEST WHEAL JEWEL.—The 85 fm. level, west of Williams's cross-course, on Wheal Jewel lode, unproductive—drove last month 2 fms. 1 ft. 6 in. The 70 fm. level west, on same lode, worth 10*l.* per fm.—drove last month 1 fm. 5 ft. The 57 fm. level west, on same lode, worth 4*l.* per fm.—drove last month 1 fm. 5 ft. The winze sinking in the bottom of the 70 fm. level, on same lode, no lode taken down in the past week—sunk last month 2 fms. 5 ft. The winze in the bottom of the deep adit, on Williams's cross-course, sunk last month 3 fms. 2 ft. The 47 fm. level, east of ditto cross-course, on Wheal Jewel lode, is suspended; the men are put to rise in the back of the level, against the winze sinking in the bottom of the deep adit—drove last month 1 fm. 3 ft. 6 in. The 12 fathom level, west of Tregoning's shaft, on Tolcarne tin lode, drove last month 1 ft. 6 in.—these men have been driving a level from surface to Tregoning's shaft. The deep adit, west of Tregoning's shaft, on Tolcarne tin lode, unproductive—drove last month 1 fm. 0 ft. 6 in. The stopes in the back of the 12 fm. level, west of Fryar's winze, on same lode, worth 18*l.* per fm.; the stopes in the back of the same level, east of ditto winze, on same lode, worth 16*l.* per fm.; the stopes in the bottom of the same level, east of Tregoning's shaft, on same lode, worth 26*l.* per fm.; the stopes in the bottom of same level, west of ditto winze, on same lode, worth 25*l.* per fm. Those stopes are working on tribute.

WHEAL MARY ANN.—Pollard's shaft is sunk 10½ fms. under the 50 fm. level. The lode in the 50 fm. level, north of the shaft, is 3 feet wide, and worth 14*l.* per fathom; in the same level south it is 2 ft. wide, producing can, and some good stones of lead. The lode in the 40 fathom level, south of the shaft, is 2½ ft. wide, composed of can, barytes, and lead; and, from its character, we expect an improvement here shortly. The men from the 30 and 15 fm. levels, from this shaft, have principally been employed at the surface since my last report—consequently, there is no alteration in them. The lode in the 60 fm. level, south of Barrett's shaft, is 2 ft. wide, and worth 10*l.* per fm. The lode in the 50 fm. level, south of the shaft, is 2½ feet wide, and worth 18*l.* per fathom. The stopes generally are producing a fair quantity of lead. The parcel of lead ores sampled on the 18th, was sold on the 24th of January to Messrs. Sims, Willyams, and Co., at 17*l.* 6s. 6d. per ton.

WHEAL PENHALE.—I find no particular alteration in this mine since Saturday last, with the exception that we have commenced sinking a winze in the bottom of the 20 fm. level north, the lode in which looks very well indeed—adding still another pleasing feature to our before good appearances.

WHEAL SARAH.—Mayhew's shaft is now down 12 fms.; ground much improved for lead, being turned from a slate to a beautiful decomposed killas, intermixed with veins of carbonate of lime and quartz; I have not the least doubt, when we cut the lode 20 fms. deep at this shaft, we shall meet with a quantity of lead of first-rate quality. The stopes in the old mine are producing good lead—paying work. We have a beautiful lode in the 30 fm. level going south, about 3 feet big, with lead in places; from the indications, I do not think we are far from a course of lead. We are preparing a sample of gossan ores for the market; I think it will produce more silver than what we have been offered for it; the price we have been offered will pay exceedingly well, and we can raise several hundred tons per month of the same, which will leave a handsome profit, leaving out the other ores; but I beg to remind you, that there is nothing settled as yet about the mill-house to receive the grinder; it is all ready at the foundry to bring on the mine, and we cannot return much blue lead before we have it, so you must not say it is our faults you have not more for market; I am certain the mine will pay a profit as soon as it is erected. I am very sorry to inform you, that Captain Trevarton died of the injuries he received from a crush from the bob of the engine.

WHEAL TRESCOLL.—I am glad to inform you that we have got through the hard ground we had in the bottom level. We are obliged now to sleen board the level. We expect now to cut the E lode No. 2, or the main lode, in the course of a few days, as we have been driving a little distance from it, to get through the hard ground. There is not the least doubt that, when cut, we shall meet with a large course of tin, as there is one gone down from the level above. We are sinking a new engine-shaft towards the moors; it is down 3 fms. below the 10 fm. level. We are getting the fire-rods ready as fast as possible, which I hope will be ready to work in the course of four or five days. We intend to sink this shaft 20 fms. in one lift, which will make the mine 30 fms. deep; then we shall be able to cross-cut the lodes at a good depth, and make the mine pay a large profit, as we shall by that time have all our machinery completed. Everything at this time gives us every encouragement that we have a rich tin mine, and I am certain we shall be in the list of dividend-paying mines before midsummer, as I can see sufficient of the mine now to say that she will soon supply herself.

FOREIGN MINES.

ALTEN MINES.—Mining report from the 10th to the 24th Dec.:—

Raipas.—In Monk's shaft two small veins of good ore have been met with, they were of short duration, but very promising. The shaft, on approaching the jaspery slate, passed through these veins, but we expect to meet them again in the 30 fm. level. At this time a small vein of ore, of about 2 in. wide, runs across the shaft—there is, however, no other sign of a lode. The 20 fm. stope has undergone no change, but in the 20 fm. level, towards the north-east, a gradual improvement has been perceptible for some time past, and the lode holds out very favourable indications. The 20 cross-cut southerly is at present temporarily suspended, for the want of sufficient hands, but we intend to resume it on the first opportunity. The tributers make good progress in some of the old workings, and a sufficient fall of snow has now taken place to enable us to bring down the ore, which I hope will shortly enable us to make a good return.

United Mines.—The improvement in the new sink, alluded to in my last report, continues promising, but the lode in the new level is somewhat deteriorated; the ground in this level is easy for driving, and we are in daily expectations of an improvement. The tributers of the 80 fm. workings produce a small quantity of ore, and after clearing the old stulls we expect they will be more successful. At Woodfall's no improvement is to be noted—the tributers continue to make some returns.

Old Mine.—The eastern pitches, above the adit level, are not looking quite so promising, and in consequence the returns are less than formerly. The lode in Slungi's sink continues to develope itself favourably. Within the last few days great change has been observable in another sink to the north-east, where the prospects lead us to form a very sanguine opinion of the value of the lode in this part of the mine. The workings on the main lode, north-east of Bergmester's, still continue poor, and the ground is very hard, but the appearance of the lode holds out hopes of improvement daily. The lode discovered in the adit level, on further trial, only proved a caunter branch, which became hard, poor, and unpromising; we, therefore, propose continuing the adit in its former run towards Bergmester's.

Mancur's.—The lode in the sink continues favourable, and the quality of the produce exceeds our expectations.

Michell's.—The new lode continues to develope itself favourably, and the tributers return some small parcels of superior prilly ore. The stope on Nellin's lode continue to yield good returns, but the prospect of the new sink are rather less promising; the lode still small, but contains some good ore in the greenstone—the ground is favourable for driving.

Carl Johan's.—The lode in the sink still continues regular and promising, but the ore rather less than formerly. In consequence of the dark days and severe weather at this season of the year, the usual impediment in our dressing has been met with; this, by reference to the note of ore delivery, will be found very evident, from the low per centage of the tribute, as compared with those made from other workings.

The following report from the QUENNAGEN MINES has been since received:—

Dec. 26.—The enclosed ore note shows a very favourable result to our tribute proceedings, whilst at the same time it has given the workmen great encouragement. The last ago of tribute ore received yielded a most satisfactory result, it consisted of 33·587 tons, containing 4·361 tons of copper, or averaging very nearly 13 per cent. of metal. Of delivery 2 tons of ore, of 9½ per cent., are the produce of the new discovery in the at A. During the winter we shall endeavour to open tribute reserves in the mines, in the ensuing summer we look forward with sanguine hopes of being able to make very remunerative returns. Our mining and other expenses are on a very reduced and there are few if any mining establishments to be found which have commenced such favourable auspices, and with no little preparatory outlay of capital, as that has been confided to my charge, and which I confidently expect will yield a result as remunerative or satisfactory than I have hitherto led you to expect.

COPIAPO MINES.—Mine report for October:—

Copiapo, Nov. 30.—CHECO COPPER MINE.—The changes here in the last month have been few and comparatively unimportant. The 20 fm. level, to the east of Harman's shaft, still continues good; lode about 2 ft. wide, and ore of a superior quality—say, 35 per cent. At the 40 fm. level, east of the same shaft, the lode continues large—about 4 ft. wide, with branches of excellent ore, but as yet the main body of the lode has not been sufficiently rich enough to pay for shipment; this end, however, produces enough to pay all the expenses, and with every prospect of improvement. At the 20 fm. level, west of Victoria shaft, we have had some good stones of ore in the last month, and the veins continues to improve as we advance. In the winze sinking from the 30 to the 40 fm. level the lode is rather narrow, not more than 10 in. wide, and producing only stones of ore occasionally. The stopes in the back of the 20 fm. level are rather improved since last reported on, and are yielding some very rich ores.

SAN PEDRO COPPER MINE.—The 10 fm. level, in this mine, present a rather more promising appearance than for some time past; the lode has become wider, about 18 in., and the ore, when dressed, is of a superior quality. The stopes in the back of the same level are also improved; lode 14 in. wide, and ore good, but the ground is very hard—always well for being wrought.

CHAÑARAL COPPER MINE.—A few days since I dispatched the troop with all the necessary materials for building ranchas (or houses), tools and provisions, for commencing operations in this new and promising mine, from which I expect the very best results. I have no doubt in my next I shall have some good news to communicate respecting our friends here.—Produce at Checo Mine for October, 42 tons; ditto at San Pedro for ditto, 12 tons.—The *Lucy Wright*, with the party of 15 Cornish miners and mining captain, left Copiapo on the 20th November.

HALLADA SILVER MINE.—It is with very great pleasure that I inform you that the prospects of this mine are exceedingly good, although we have broken out but a small quantity of ore for this month, having had all the barreteros dessing the lode in the last inst. In all the productive levels and winzes; and it is our intention to the same course of opening ground on the lode, without breaking any of the ore, the 10 or 12th proximo; still, from the silver visible in the wall of the lode at the different points, and from the stones of rich ore occasionally broken from it unintentionally, by blasting the country, we have the very best prospects of a most splendid break out of rich ore in the ensuing month; and what is so very encouraging in this mine is, that we have not to trust to one solitary labore, or point of operation, where these prospects present themselves, but to six different points, at a considerable distance apart from each other; this is a very encouraging feature, as it shows the great extent of richly productive ground. The ore broken out in October and November months has been returned, producing to the company's part 561 marcs of plata pina, yielding on an average about 200 marcs per cajon of 64 quintals.

SAN JOSE DEL CARMEN SILVER MINE.—The lodes in this mine are still very large, and producing a great deal of ore, that yields from 50 to 100 marcs per cajon; and from the appearance of the vein in the adit level, and in a winze sinking below the adit, I think we shall very soon have richer ore in large quantities. We have broken down the lode in the above-named workings in the last month, and have a great many tons now at the amalgamation establishment in course of returning, but what the produce will be I cannot pretend to give any thing like an accurate account; some of these ores are very deceptive, particularly when they are combined with cobalt, as some of them are.

CARMEN ALTO SILVER MINE.—We have sunk our shaft to a 16 fm. level, and have driven a cross-cut 4 fms. north, and have cut the Carmen lode, which is about 2½ ft. wide. I brought down a stone to the city, and had it assayed, which gave a produce of 10 marcs per cajon. We have also resumed the sinking of the shaft, which is now about 6 ft. below the said level, and we estimate that we have 8 fms. more to sink to cut the junction of the two principal veins, where we have great hopes of finding the ore of a richer quality. We are driving the 16 fm. level north, and expect, in about 10 fms. driving, that the Merceditas lode will fall into the Carmen, and form a junction, when something good may be expected here also. We are also sinking on the Plomiza lode, which continues large, and shows the most favourable indications for making rich ore in depth, but our progress here is very tardy, having only one barretero, and the ground rather hard and unfavourable for blasting.

MERCEDITAS SILVER MINE.—I have been to-day more than a little delighted to receive from the captain of this mine three stones of silver ore, of a very superior quality. He states as follows:—"We have to-day broken down the lode in this mine in the deepest labore, bottom of the mine, and find it greatly improved, and I send you three stones per bearer; the rich part of the vein is from 5 to 6 in. wide." This ore I have not had time to assay, but I believe it will pass 500 marcs per cajon, for it possesses a great deal of visible native silver. Should it only continue as at present, we shall soon make good returns; the company have 9½ barras in this mine. In a winze sinking further north, on the same lode, we have had some good stones of ore, but this is not so deep as the workings referred to above. I am daily more convinced and confirmed in my opinion, that there is nothing wanting but a little patience to sink deeper in this mine in order to find immense wealth; the deepest mine has not reached a depth of 30 fms. from the surface, and we are now hearing of improvement almost daily in one or other of the mines in Tres Puntas, where there are about 130 in active operation, and more than 40 in a productive state, while six months since there were not a dozen producing ore of a quality to pay for returning.

COLORADA SILVER MINE.—The lode in the bottom of the shaft, in the centre of the sett, has undergone a very considerable change in the last month, and also the ground about it, which has become soft, and as nearly allied to that of the Al Fin Hallada as I ever saw. The vein is now 3 ft. wide, and producing some stones of ore, containing silver, and we are daily expecting it to be found richer, so as to pay for returning, and leave something to assist the other expenses. We have put additional force in this shaft, and are now working day and night, with the greatest hopes of shortly finding the lode rich. We are also sinking on the oblique vein, referred to in a former letter, from which we have taken out some stones, producing 20 marcs per cajon. This vein is about a foot wide, and has a most beautiful appearance, but as yet I am satisfied we are not deep enough for it to make, or rather produce, ore of rich quality. Our operations are confined to these two points at present, and it is with great difficulty we can procure labourers to carry on the works.

SANTA ANA SILVER MINE.—We are sinking a shaft and driving a level in this mine, in both of which we have a pretty lode, producing some ore of fair quality, and in the shaft particularly we are daily expecting improvement. We have 14 cargas, about 2½ tons of ore, now being amalgamated from this mine, but as it is not yet finished, I cannot give an accurate account of the quality, but I think it will be about 100 marcs per cajon.

TRANSITO SILVER MINE.—On account of our being short of hands, our operations have in the last month been confined to the sinking of the shaft, which, I am happy to state, is going down in very favourable ground, and the lode large—say 2½ ft. wide—a prettier vein, with the absence of silver, I never saw.

SEGUNDA EXPLOTADORA GOLD MINE.—In this mine we are working at two different points—the one on the gold, and the other on the silver vein; the former is a large and beautiful lode, 3 feet wide, and all producing gold, but not of a quality to carry to the city for returning with the present high freights; but I am fully convinced that we could make very good returns had we a small amalgamation establishment at Puquios, which would cost about 56000.

SANTO DOMINGO GOLD MINE.—We have confined our operations here also to the sinking of the shaft, which is going down on a lode 4 ft. wide, all of which is ore that would pay for carrying to Puquios, had we an establishment there; and some of this ore will pay for carrying to the city when properly dressed, which I hope to be able to attend to very shortly.

CHARCABUCA GOLD MINE.—We shall resume operations here in the course of next month, and I have every reason to believe the result will be good.

DESCUBRIDORA GOLD MINE.—Our operations here have been very limited also in the last month, by reason of the scarcity of labourers and the high price of carriage. The two points, however, now being worked—that is, a winze and a level—are giving some good ore of 1½ to 2 lbs. of gold per cajon, and we have 4 cajons (12 tons) ready for carriage, which will be returned shortly; and I hope, when I make my next remittance of silver after the present, to be able to add to it one ingot of gold.

By the present opportunity I remit you ..... *Mcs.* 382 3 3 of plata pina.
And in bar silver 153 2 0

Total marcs..... 1034 5 3—£1800.

Extract from Capt. Waters's report, respecting a new road from the silver and copper mines at Tres Puntas to the port of Flamingo.

On the 7th inst. I left Tres Puntas with Mr. Grellet and the captain of the troop, in company with a man or two, who had some knowledge of the road to Flamingo. The object of this survey was to find a good road to the coast from the silver and copper mines at Tres Puntas, which I am happy to say has succeeded beyond our most sanguine expectations. On the 15th inst. Mr. Grellet informed me that his party had arrived at Tres Puntas, and that he had discovered an excellent road from the port of Flamingo to that place, distant about 24 leagues from the rich copper mine of La Compana, with watering places on the road, and sufficient pasture by the way that would support the troops, and enable them to work from three to four months in the year. They took some barley and straw with them for the animals, but none was used, and I believe the mules returned in a better condition than when they left the company's pastures. He farther informed me that he had seen some copper mines on the road, which had formerly been worked by the natives several years ago, and who were obliged to bring their stores and provisions from Copiapo. I have the greatest confidence that we can convey our ores from Tres Puntas to the port of Flamingo as cheaply as we can to the city, and thus save all the extra expense of transhipment from the city to the port of Copiapo. After some consideration, and our consulting with our lawyer, I determined upon making a request to the supreme Government at Santiago for permission to ship ores at Flamingo, and import provisions, tools, &c., for the use of the mines at Tres Puntas. I also denounced the new copper mines referred to—they are situated within 6 leagues of the port.

IMPERIAL BRAZILIAN MINING ASSOCIATION.

Bananal, Nov. 23.—Here there is nothing calling for particular remark. During the last 10 days a few boxes of coarse work for the washing-house have been obtained from the Big Pump vein, in the back of the 6 fm. level, but yielding very little gold. The captain's report will show that we are now driving the adit as a cross-cut through the jacotinga towards Brightman's shaft, the principal object of which is to prove, as far as this will do it, the ground in this direction. The vein ground in the backs of the 6 and 7 fm. levels, west and north of Thomas's, is exhausted, hence the cause of their being stopped. The places where the men are now working, we hope, will give us some tolerably good stamps work. Gibson's shaft is going down tolerably satisfactorily, but is not yet sufficiently deep to effect the drainage of the Megalhaes vein in the bottom of the 14 fm. level, consequently this place must yet remain idle. The Big Pump vein, in the bottom of this shaft, has been very poor during the last 10 days; the shaft is now about 3 fms. below the 14 fm. level. I think you will be pleased with the progress made in sinking Gibbes's shaft; it is now holed to the adit level, and I hope our progress below this will be equally satisfactory. I look forward with great anxiety to our getting below the bottom of Thomas's shaft, as our greatest expectations are from this place. Gibson's shaft is now within 9 ft. of it, and as the water in it is yet of very little impediment, I hope in about a month from this time to see this part of the mine perfectly drained, and thus enable us to prosecute with facility all the most productive parts.

Gongo Soco.—I am just returned from this place. The hammer mill is not yet at work, but is very nearly completed. We are clearing away the ground for the wheal pit, &c., of Goldsmid's stamps, and I have contracted for its re-erection, and hope to have it finished by the end of February next. The open cutting is getting on as fast as possible, but our progress has not been great during the last 10 days, from the same cause as stated in my last letter. Some of the people employed on this work we have been obliged to put to remove the ground for Goldsmid's stamps, the speedy erection of which is of great importance, as Walker's and Joinville's cannot work much longer without undergoing extensive repairs. We have an excellent stamps axle at Cata Preta, quite complete, and capable of carrying 20 heads; this I contemplate sending to Gongo, and fixing it to the Joinville's wheel, as when the latter is put in thorough repair, it will work several heads more than it is doing at present. The small one of 12 heads, which she is now working, will be fixed to Goldsmid's, as one of the axles is completely worn out. I have ascertained that the carriage of the Cata Preta axle will cost rs. 250, but the expense of making a new one, including iron work, &c., will be nearly double that amount. The supply to the Walker's and Joinville's stamps has been derived from the same sources as mentioned in my last. The Great Western still continues to give a little gold—2 ozs. 10 dwts. in the last 10 days—but no discovery of importance has yet been made; we are, however, still persevering in our researches in this part of the mine. I intend dispatching the troop to Rio with the gold on the 7th of next month.

Bananal, Dec. 3.—I am making preparations to start the troop with the gold to Rio on the 7th inst., the Government duty will be levied on the 5th. During the past 10 days we have had a few boxes of coarse work for the washing-house, principally taken from the bottom of the 6 fm. level. The vein in the bottom of Gibson's shaft, although giving work for the stamps, has been rather poor; this can be accounted for as follows:—The vein of gold has an inclination towards the east of about 4 ft. in a fm., and the shaft being perpendicular has passed through it, consequently we shall not meet with it again till we drive from the shaft to cut it at a deeper level—say, 10 fms. below the 14, or 24 fms. from the adit. I am happy to say that our progress in sinking Gibson's shaft, is very satisfactory; it is now as deep, within a foot or two, as the bottom of Thomas's, and ere I have the pleasure of writing you again, we shall be below any of my predecessors' works. The water, I am happy to say, is yet of no impediment whatever to us, and I have great hopes that we shall be able to reach the 24 fm. level with our present arrangement of the machinery, pumps, &c. We are going on readily with the erection of the iron wheel; it is not yet two months since we commenced this work; an immense quantity of ground has been removed to make the wheel pit; the heavy frame-work has been fixed, and about 200 perches of solid masonry built in this time. The axle, with all the cast-iron sockets, &c., was fixed on its bearings on Thursday last; the carpentry and smiths' work are in a forward state, and I think the wheel will be completed by the end of the year. We shall then have sufficient power to command all the water to, say, 30 fms. below the 14 fm. level, and by the time we reach this depth we shall be able to have prepared a new wheel to take the place of Thomas's, the latter being in a very rotten state. In driving the 6 fm. level south of Thomas's, we have unexpectedly met with a mass or bed of decomposed hatalamite in the midst of jacotinga, which, being wet, is very difficult to penetrate; and, as the object of driving this level is not very important, I consider it prudent to stop it, and prove the ground at some future period, by driving a deeper level through it. The captain's report, which accompanies this, will inform you of the progress made in the different points of our operations, and need very little or no comment from me. I think we shall not be able to prosecute Megalhaes vein below the 14 fm. level until Gibson's shaft reaches the proposed 24 fm. level, where we shall drive under and drain it; we shall then have considerable dry backs, or ground on all the three principal veins, and which will be worked from the backs dry, instead of digging after them in the water, as practised heretofore. The rains have now set in in earnest, which I fear will much impede our surface operations both here and at Gongo.

Gongo Soco.—I beg to congratulate you on the increased produce here, but at the same time I must inform you that everything has been cleared up in order to send you as large a remittance as possible. Capt. Guy's report, which I forward herewith, will inform you of the nature of our proceedings, and the progress made during the last month. We are still prosecuting our researches in the western part of the mine, but as yet without much success; the great western stamps has yielded in the last 10 days 4 ozs. 13 dwts. of gold, thus showing that the whole mass of jacotinga is auriferous. The experiment now making on the gangue, near the Peak, I hope will give us some encouragement, as the whole of it shows gold by washing in the batea. I intend going to Gongo immediately after despatching the troop to Rio, and shall push on with all possible speed the re-erection of Goldsmid's stamps, as well as all the other works necessary to our getting produce. The clearing and repairing the adit is tedious and expensive.

LINARES MINES.—The following has been received from Mr. H. Thomas:

Linares, Jan. 26.—I am glad to advise you that we are again busy in preparing to sink under the 30 fm. level, and, in a fortnight from this day we expect to have everything arranged. The water in the mine being so much less than we had at first anticipated, the engine is now working 5 to 6 strokes per minute, we hope that, at the end of March, we shall have the third level unwatered. With respect to the operations in the mine during the past week, they do not offer much of novelty, except that Capt. Curry has succeeded in penetrating in the second level further west than before, and discovered other arches of ground, standing in the back; one of the Englishmen who accompanied him, offered to take a tribute on it for two months, at 1*l.* per ton, and to pay all costs, except dressing. I mention this to show you the nature of the vein, and what it may be made in good hands, and not for the purpose of raising undue expectations of the supply to be derived from the old arches by Spanish workmen, who are very inferior to English tributers. However, I may say that, if we were in receipt of English prices for our lead, and had plenty of Cornish tributers, we should be paying cost, even before seeing the next level. We are cutting a plat at the eastern shaft, and clearing stuff at San Juan, with the object of immediately communicating these shafts to the 30 fm. level. Except the part to the west alluded to above, I have examined carefully the other operations, and can only add that some of the tributers are working in good ground, the lode producing about 2 tons per fm.

SOUTH AUSTRALIAN MINING ASSOCIATION—(BURRA BURRA).

The half-yearly general meeting of shareholders was held at the offices of the company, Rundle-street, Adelaide, on the 17th October,

CHARLES BECK, Esq., in the chair.

The following directors' report, with statement of accounts, were presented:—

During the last six months the copper ore market in Britain has been subject to great fluctuation, and recently, when a considerable quantity of the association's ores were for sale, the price realised was about 3*l.* per ton less than the average rate. The Swansea sale of the 21st June last, which is the latest known in the province, shows a slight improvement; and, from advices subsequent, it is expected that prices will speedily advance. The sales effected in Adelaide have been more advantageous, and the directors hope that the time is not far distant when the whole of the ores may be disposed of here. Since the accounts were closed the directors have sold 700 tons of ore for delivery at Port Adelaide at good prices. Accompanying this will be found the usual return of ore raised during the past six months, and which nearly equals in quantity, while it exceeds in quality, the production of any previous half-year. The fixing of the pumping engine is expected to be completed and at work on the 20th inst., and, with its assistance, still better results may be expected—the operations of the last six months having been much restricted for want of the engine. New discoveries of ore continue to be made in the mine, and scarcely a month passes without some additional evidence of its value. Capt. Roach reports on the principal workings thus—

The 30 fathom level, going north from Graham's main shaft, we have driven 10 fathoms on the course of the lode—the size of which we have not yet ascertained; we have no wall on either side. This end produces blue and green carbonate of good quality—the better part of which is gone down. At the 30 fm. level going south from Graham's shaft we have driven through a course of oxide and malachite 20 fms. in length, varying in width from 1 to 8 fms., and producing ore from 40 to 48 per cent. At the 30 fm. level going south from Ayer's shaft we have also driven 20 fms. through another course of ore, much the same in size and quality as the one above-mentioned. We have seven pitches in full operation in this level, from which I have no doubt we shall extract 500 tons of ore during the present take (six weeks). At the 20 fm. level we have several good pitches in the backs and bottoms, particularly Gartrell's pitch, at Kingston's, where they have recently cut a new bunch of malachite. The remainder of the pitches about the 6 and 12 fm. levels are looking as well as can be expected—considering the time they have been worked. The pitches in the 10 fm. level, at Bunce's, are looking favourable.

On the 29th Sept. last the establishment at the mines consisted of 16 officers, 2 surgeons, and the following miners, mechanics, and labourers—viz.: 281 miners, 13 mine labourers, 3 timbermen, 8 engineers and fitters, 13 carpenters, 6 sawyers, 6 smiths, 6 strikers, 9 masons, 22 labourers, 8 stablemen, 2 watermen, 49 labourers, 11 carters, 12 youths, carters, &c., 15 landers, 15 whim boys, 21 boys on floors, &c., 195 men ore dressing, 12 boys ditto, 1 weigher, 1 watchman.—Total, 727. This number will be considerably increased so soon as the engine is fairly at work.

A return is annexed showing the total quantity of ore raised since the opening of the mine, and the manner it has been disposed of. There is also a return of the quantity of copper received to the 29th ult. from the Patent Copper Company on account of ore delivered them. The directors have hitherto been enabled to sell the whole of the copper here at such prices as leave the company a good profit, and hope it will prove remunerative to the purchasers. The directors prefer this course to shipping, but as it is not certain that a market will always exist here for the whole of the copper, a trial shipment has been made to England, and, if necessary, similar shipments will be made to other places as opportunities offer.

The return of copper shows the sale of about 61 tons only, but a further quantity has since been received, and a sale of 75 tons effected. In addition to this, there will be deliverable during the present year about 200 tons of copper, in respect to ores already delivered to the Patent Copper Company.

On the 5th ult. the directors resumed the payment of dividends, and they hope nothing will occur to prevent their continuing them regularly.

The attention of shareholders is called to the annexed statement of accounts. Part I. shows the expenses and profits of the association from the 31st March, 1847, the date of the previous balancing, to the 31st Dec., 1847, and it will be seen that after writing off all the dividends declared and paid to the present period, there remains to the credit of profit and loss account the sum of 7265*l.* 6s. 1d.—so that, in fact, the whole of the dividends—amounting to the large sum of 135,520*l.*—have been paid from actual profits realised from the working of the Burra Burra Mines from the 29th Sept., 1845, to the 31st Dec., 1847, a period of only 27 months; the quantity of ore produced in this time being 18,567 tons, and cost in production 133,879*l.* 14s. 5d., or 7*l.* 4s. 2d. per ton. It brought, clear freight and charges, 296,481*l.* 14s. 1d., or 14*l.* 10s. 3d. per ton, and it left a clear profit of 135,601*l.* 19s. 8d., or 7*l.* 6s. 1d. per ton.

Part II. exhibits the current balances from the 31st Dec., 1847, to the 29th Sept., 1849.

Part III. is a statement of the liabilities and assets of the company, and in the preparation of which due regard has been had to all reasonable contingencies; as, however, many of the items can only be supplied by estimation, the balance of profit there shown may be increased or diminished as changes of markets or other unforseen circumstances may happen; but it is, nevertheless, the belief of the directors that it will, in all probability, be realised.

It has been the pleasing duty of the directors from time to time to congratulate the shareholders on the satisfactory state of their affairs, but at no time have they been able to do so more confidently than on the present occasion.

It will be part of the business of the meeting to elect a director in the place of John Brown, Esq., disqualified, but who is now eligible for re-election.

Stock of ore on hand at the year ending 31st March, 1849, with the quantity raised since that period, the disposition of the same, with the quantity remaining on hand at the port and mines:—

1849, March 31	At Port Adelaide	*Tons*	678	7	1	20			
,,	On the road to ditto		214	14	3	0			
,,	At the mines		2312	0	0	0	3205	1	0 20
Sept. 29, 1849	Raised since 31st March last						5649	16	3 23
	Total	*Tons*					8854	18	0 15
March 31, 1849 to Sept. 29	Ore exported for sale						2751	3	2 3
	Ore sold within the province						670	2	2 19
	Ore delivered to the Patent Copper Company						2466	14	1 0
	ORE ON HAND.								
Sept. 29, 1849	At Port Adelaide	*Tons*	267	8	0	22			
,,	On the road to ditto		200	15	1	0			
,,	At the mines		2498	16	1	0	2966	18	2 22
	Total	*Tons*					8854	18	0 15

Total quantity of ore raised from the Burra Burra Mines since the opening on the 29th September, 1845, to the 29th September, 1849 (four years), with the disposition thereof:—

Sept. 30, 1846	Ore raised to date	*Tons*	6359	10	0	24
,, 1847	,,		10794	17	1	7
,, 1848	,,		13791	11	1	14
,, 29, 1849	,,		*7789	16	3	23
	Total	*Tons*	37,735	13	3	12
Sept. 30, 1845 to Sept. 29, 1849	Ore exported for sale		26,676	16	2	14
	Sold in the province		5,625	5	1	4
	Delivered to the Patent Copper Company		2,466	14	1	0
,, ,,	Ore on hand in the province		2,966	18	2	22
	Total	*Tons*	37,735	13	3	12

* The mines were not worked from the 30th Sept., 1848, to the 6th January, 1849, and only partially from that period to the 31st March, 1849.

Expenses and profits of the association, from 31st March to 31st December, 1847 (nine months):—

1847, March 31 to Dec. 31.	Expenses of the association, including cost of producing 8728 tons of ore	£	67,271	2 4
	Balance of profit carried down		62,326	6 1
			£129,597	8 5
1848, June 1	Sixth dividend, 200 per cent.	£24,640		
Sept. 1	Seventh dividend of 200 per cent.	24,640		
1849, Sept. 5	Eighth dividend of 100 per cent.	12,320	61,600	0 0
,, 29	Balance undivided profit		726	6 1
	Total		£62,326	6 1
1847, March 31	Balance of undivided profit	£	8,856	9 7
Dec. 31	Rents to date		126	0 0
	Fees		23	0 0
	Net proceeds sale of 8728 tons of ore		121,086	18 10
			£129,597	8 5
1847, Dec. 31	Balance of profit brought down		£62,326	6 1

SOUTH AUSTRALIAN MINING ASSOCIATION REPORT—*(Continued).*

Statement showing the liabilities and assets of the South Australian Mining Association, Sept. 29, 1849:—

LIABILITIES.

Capital stock	£12,320	0	0
Balance of eighth dividend	535	0	0
Sundry creditors, including drafts against 10 tons copper, and 11,941 tons of ore exported for sale	168,282	11	7
Outstanding claims, unsettled accounts with workmen and others, estimated at	10,000	0	0
Balance of profit	86,357	2	11
Total	£277,494	14	6

ASSETS.

Landed property, consisting of 11,740 acres, including the Burra Burra Mines, valued at the cost price only	£12,191	17	8
Buildings erected by the company, exclusive of tenants' erections	14,060	6	0
Estimated net value of 10 tons of copper and 11,941 tons of ore exported for sale	164,900	0	0
Net value of 267 tons of ore at Port Adelaide	5,607	0	0
Net value of 2700 tons of ore at the mines and on the road	36,900	0	0
Net value of 24 tons 7 cwts. of copper on hand	1,786	11	0
Net value of 232 tons of copper for ore delivered to the Patent Copper Co.	16,240	0	0
Plant, machinery, stores, horses, bags, timber, hay, corn, &c., valued at	16,000	0	0
Office furniture, valued at	200	0	0
Sundry debtors, bills receivable, and cash in hand	9,609	0	8
Total	£277,494	14	6

The report and accounts were unanimously passed; Mr. C. S. Penny elected director in place of Mr. John Brown, disqualified; the thanks of the shareholders given to Capt. Henry Roach, for his efficient and zealous services in the management of the mines; to the directors, for their management; and to the secretary, for his zeal and attention to the interests of the shareholders.

TAMAR SILVER-LEAD MINING COMPANY AND WORKS.

A special meeting of shareholders was held at the offices, Salvador House, Bishopsgate-street, on Thursday last, the 7th inst.

PERCIVAL N. JOHNSON, Esq., F.R.S., in the chair.

The notice convening the meeting having been read, the CHAIRMAN observed that he regretted to say that their chairman (Mr. Grout) was still confined to his house in the country, which he had not been able to leave, through indisposition, for two months; Mr. Stainsby had, however, received a letter from him, in which he stated his concurrence in a measure, which it would be their duty to lay before them on that occasion. At the last meeting an addition to their capital had been proposed, for the extension of their smelting works; the directors had taken the subject into their serious consideration, and had a plan to offer. In the first place, he would state that their works, buildings, and machinery, representing invested capital, amounted to 8149*l.* 13s. 6d.; their reserve fund was 2293*l.*, and they had an available balance at the bankers of 2267*l.* 11s. 6d.; this was as the accounts stood, made up to the end of Dec., and there was the Jan. profit to add. He regretted to say the smelting works had not been so profitable as on previous years, and would inform the meeting how it was to be accounted for. Since they had been established, they had been opposed by four rival establishments, who, in expectation of a rise in the price of lead, had sold themselves up so close on their contracts, that they gave a much greater price for ores than the state of the market really warranted; they had been more cautious, and yet they had bid up well for the ores, but were beaten. He took six ticketings at random, to show that they bid a very fair price; one which sold for 18*l.* 15s. per ton, they had bid 18*l.* 12s. 6d. for; another sold for 14*l.* 12s., they bid 14*l.* 8s. 6d.; two others, 14*l.* 2s. each, 13*l.* 12s. 6d., and 14*l.* 1s. 6d. respectively; one 10*l.* 2s. 6d., 9*l.* 13s.; and one 17*l.* 8s. 6d., 17*l.* 3s. 6d. They had, however, kept on without loss; the works were in full operation, and he trusted they would so remain; the present competition could not last, and if they only kept on their legs for a time, a change for the better would doubtless follow. The smelting works had been established for the benefit of the Tamar Mines, and they had been of considerable advantage. In the past 12 months there had been sold 1195 tons of silver-lead ores, 8 parcels of which had been purchased for their own smelting works, and 4 by other parties; the former realising, through being purchased by the smelting department, 4*l.* per ton, or 3200*l.* over what they would have sold for had they been left to general competition. They now required a floating capital for the purchase of suitable ores for mixing with their own, and enable them to adopt Pattison's de-silvering process, by which they should be able to compete with the other establishments. The chairman read a note which had been received from Mr. Smith, the manager at the works, in which he stated that, by the adoption of this process, instead of a loss of from 9 to 9½ per cent. of silver, which took place by the common method of reduction, the loss, compared with the assay, would not exceed 1 per cent. The buildings were nearly erected, ready for the reception of the new machinery; and he fully expected they would be in operation in about six weeks. He stated that ores still ran high; that he bid up well for three parcels of East Wheal Rose, and was outbid by Sims, Willyams, and Co. in all—in one by only 6d. per ton. The new capital would enable them to lay in stocks of the most appropriate ores, when they could be obtained at moderate prices. The chairman then said the necessary erections would not cost above 500*l.* or 600*l.*, the remainder of the money raised would be floating capital. The board had received several proposals of the best mode of raising the necessary capital; one from Mr. James, recommending the borrowing the money, and keeping back the dividends until paid; this was not considered advisable. Mr. Grout recommended the working on the profits, and not paying the dividends until the proposed capital was raised. He (Mr. Johnson) had proposed the making a call of 10s. per share, leaving shareholders the option of not paying it in cash, but out of their first dividend, paying interest in the meantime.

Mr. BAWDEN here proposed that, as the smelting-works were unprofitable, they should at once sell them, realise probably 12,000*l.*, and keep their attention to their mining pursuits. This proposition was not, however, supported by any other shareholder.

A very long discussion took place, as to which was the best mode. Mr. JAMES GODWIN proposed creating 1400 new shares, of 5*l.* each, to be issued at 1*l.* premium, and to be divided amongst the present proprietors, in proportion to the number of shares they now hold; this, Mr. STAINSBY explained, could not be done, as they could not divide them *pro rata*.

Mr. TRENERY said, if they raised 9600 shares, at 10s. or 12s. per share, and gave one new share for each old one, it could be done, and the necessary amount would be raised.

Mr. JAMES was still for raising capital on debentures, as money was easy, and the shares would not be depreciated, as they would be if new ones were issued.

Mr. TAYLOR said, it appeared to him absurd to make a call, and pay a dividend at the same time, which would be only putting a sovereign in one pocket and taking one out of the other. He proposed that the most straightforward, and least injurious course would be to keep back the dividends until the 5000*l.* was raised; that the shares be then called in, and debited with a 10s. dividend, and credited with a 10s. call, and that, in that time, the works would probably be in a greatly improved condition, and the dividends be regularly paid.

THE CHAIRMAN and Mr. STAINSBY showed that, by either of the plans for delaying the dividend, the directors had the balance of 2267*l.* 11s. 6d. to begin with immediately, and the increasing profits would furnish them with the necessary capital, the mines being in a highly profitable state, and he had no doubt the smelting business would recover itself.

A formal resolution was then founded on the above plan of Mr. TAYLOR, seconded by Mr. GODWIN, and carried nearly unanimously, one hand only being held up against it. Thanks were then voted to the chairman and directors, and the meeting separated.

WHEAL BASSET.—The following is the statement of accounts to 5th Feb.:—By copper and tin ores sold, Nov. and Dec. (less lord's dues), 4791*l.* 10s. 1d.; materials sold, 5*l.* = 4796*l.* 10s. 1d.—Labour cost for Nov. and Dec., 1929*l.*; merchants' bills, 737*l.* 12s. 10d.=2666*l.* 12s. 10d.: leaving profit, 2129*l.* 17s. 3d.; add balance last account, 270*l.* 10s. 4d.=2400*l.* 7s. 7d.; by dividend of 15*l.* per share, 1920*l.*—leaves balance at bankers, 480*l.* 7s. 7d.

THE LATE MR. TREFFRY.—The funeral of this lamented gentleman took place on Tuesday last; and it having been announced that the ceremony would be public, and the morning being fine, the attendance was very large. The line of procession from the house to the church was kept clear by the agents and others who had been in Mr. Treffry's employ. The service from the desk was read by the Rev. Mr. Bampfield; and at the vault, which is within the church in the south chancel, by the Rev. John Kempe, the vicar of Fowey. After the funeral, most of the gentlemen who had attended, returned to the house, and were introduced to the Rev. Mr. Willcocks, to whom, we understand, Mr. Treffry has left all his property after five years, during which time it is placed under the charge of Mr. J. H. Meredith, with powers to carry on and complete the important works in which Mr. Treffry was engaged. The great importance of this provision to the county, as well as to the numerous workmen who were employed, it is impossible to estimate too highly at this time; and it affords a striking evidence of the largeness of mind and great public spirit which characterised all Mr. Treffry's undertakings.

SUNDERLAND DOCK.—The coffer dam now constructing at the entrance of the tidal harbour will be finished in a day or two, when Messrs. Craven will commence to pump the water out with two engines, driving six pumps. It is expected that the water will be pumped out in 18 days.

NEW LOCOMOTIVE.—A trial has been made on the Northern Railway of some new locomotive engines, intended to perform the distance between Paris and Calais (288 miles) in six hours. The trial, it is said, was perfectly successful.

GREAT CENTRAL GAS CONSUMERS' COMPANY.—On Friday this company's Bill for better supplying the City and places adjacent with gas, was declared to have complied with the standing orders.

FOREIGN COPPER ORE.—The arrivals of importance since our last, are—the *Charlotte Whitmore*, from Cuba, with 500 tons of copper ore; the *Lady Pirie*, from Cuba, with 500 tons of copper ore, and the *William Nicholson*, from Cuba with copper ore, each consigned to the Cobre Company.—*Swansea Herald.*

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

BODMIN CONSOLS.—On Wednesday morning the men commenced again at Pye's end, having been employed for the last fortnight at surface work. The new water-wheel will be completed next week, the leets and wheel-pit being ready, when sinking will be resumed. Something good may be expected shortly, as the lode is widening as they get further into the hill, and the ore is found under very favourable circumstances.

HAWKMOOR.—The various operations at this mine are becoming more extended, and every prospect presents itself of the return exceeding cost, a point ever of interest, and the most conclusive, as to the value to be attached to a mine. The extent of the sett, which is in the immediate locality of the Devon Great Consols or Wheal Maria, and Gunnis Lake; extends for upwards of a mile and a quarter on the run of the lodes, and about three-quarters of a mile in a north and south direction; six lodes have been seen, being parallel within 125 fms., the main operations being on one of the middle lodes, known as the Wheal Marquis lode; here two shafts have been sunk, at a distance of 50 fms. from each other, and the 10 fm. level has been driven 90 fms. The 20 fm. level has been extended east and west from the shaft 50 fms., and a winze sunk from the 10 to the 20. The engine-shaft is down to the 30 fm. level, but no workings have yet taken place at that level on the lode, the size of which varies from 2½ to 5 feet, with good and well-formed walls. The bunches of ore going west are found at times to yield 5 to 6 tons per fathom in the 20 fm. level; the lodes are taking their course nearly east and west, with a south underlay of 1½ ft. in a fathom; the lode immediately south, however, has a north underlay, and will intersect the present lode at a depth of from 50 to 60 fms. from surface. The present returns are from 18 to 20 tons per month, of ore producing 5*l.* to 5*l.* 10s. per ton, and the monthly cost may be taken at about 150*l.* About 30 men are employed, and it is presumed that the further calls cannot exceed 2*l.* per share, or 500*l.*, ere the mine makes profitable returns. We should observe that the mine is held under lease, 19½ years unexpired, at 1-15th due, and that about 800*l.* worth of ore has been sold. There is a water-wheel of considerable power, which has been erected, being 24 feet diameter, and 12 feet breast. The Wheal Josiah cross-course intersects, at about 16 fms., in the 20 fm. level. The outlay is about 4000*l.*, divided over 256 shares, of which the mine is constituted, the principal number of which is, we are given to understand, held by a few individuals.

LLWYNMALEED.—There is no doubt of this mine proving a profitable concern; the lead improves both in quantity and quality in depth. The new steam-engine is contracted for, and is to be erected by May, when the mine will probably yield large returns.

KINGSETT AND BEDFORD.—I attended the general meeting, at the Half-Moon Inn, Exeter, on Monday last, and was highly gratified at the report of Capt. Spargo, to find the mine in so improving a position, which will enable them to make a return of not less than 40 or 50 tons of lead per month, as soon as the wheel, crushers, &c., lately purchased, are erected. A contract is immediately to be entered into with some party at Tavistock, or elsewhere, for their removal and erection at Kingsett and Bedford, in a workman-like manner, and parties giving the lowest tender will no doubt (under the "free trade" principle) be accepted. As soon as this is completed, the shareholders will see the value of their property. I will venture to say, there is no infant speculation, either in Devon or Cornwall, which will cost so little, and make the returns we shall; and I would caution the proprietors against parting with their shares, which are at this moment worth 20*l.* each; an inspection of the mine is only wanted to prove this fact.

RUNNAFORD COOMBE.—On Tuesday last the steam-engine was started for the purpose of draining the water from the engine-shaft, by a run of horizontal rods, about 100 fms. in length, and it is intended to erect 36 stamps-heads, to be attached to the same engine, which machinery is already on the mine. The engine is single-acting, horizontal, on the combined cylinder principle, and works with that harmony and smoothness which characterises Mr. West's erections. The shareholders who were present from London, felt much regret for the unavoidable absence of that gentleman, who was detained in consequence of the lamented death of J. T. Treffry, Esq. Mr. J. Powning, Mr. West's assistant, attended the engine, entirely to the satisfaction of all present. At starting, the men employed gave a hearty "three times three," and with the shareholders and parties invited, returned to Buckfastleigh, where they partook of a bountiful supply of good old English fare. The usual toasts were given, and the time passed socially by the adventurers and their friends. In the meantime, the men and their wives enjoyed themselves with fiddle, dance, and glass, during the evening. Next day the engine-shaft was taken to sink to the 10 fm. level (5 fms. of which is already down), where there is every probability of cutting a rich and profitable lode, proved in the adit level for a depth of 120 fms., waiting only to be drained, in order to make the ore marketable.

SOUTH ROSKEAR.—The sale of these mines, as advertised in your Journal, took place at Matthews's Hotel, Camborne, on the 14th of January, when Mr. Burgess gave 3500*l.* for the sett and materials. South Roskear is a most extensive property, and the objects of most importance are the east and west ends of the mines. There are five different leases, and it is intended for the east sett to comprise two leases, to be called in future Pendarves Consols, and divided into 1026 shares; the three western setts, to be called Gustavus Mines, with a like number of shares. Since Pendarves Consols has been working, a valuable discovery has been made in a pitch; whether it will prove to the expectation of the new holders time alone must determine. The mine is commenced with spirit, and levels resumed that have been abandoned for 20 years. It is a good locality, which must be admitted by all unprejudiced parties, and as these mines in early copper mining pursuits—say, a century back—produced large quantities of copper ore, it is only fair to presume, that in the shallow ground unwrought, something may still be hid in secret for the present shareholders, if they drive, blast, and sink with perseverance.

MENDIP HILLS MINING COMPANY.—Our readers will remember that, somewhere about two years since, there was a riotous assemblage at the Mendip Hills Mine, when the troughs and leats used for conveying water from a neighbouring river, to wash the slags, were all demolished, and the works stopped for a time—the exciting cause being that the lead poisoned the river, and rendered it unfit for use in the neighbouring villages. The company had entered an action to recover damages against the hundred of Winterstoke, and a verdict was obtained for the plaintiff. A rule for a new trial had been obtained, on the ground that the troughs were not erections for the purpose of carrying on the business of the mine within the words of the Act of Parliament, 7th and 8th Geo. IV., c. 29.—Mr. Cockburn, Mr. Smith, and Mr. Phinn, in the Court of Queen's Bench, on Monday last, showed cause against the rule, and contended that the question, whether the troughs were necessary to the proper working of the mine, was a question of fact, and not one of law; but, even allowing the latter, it was clear that the process of washing the slag was necessary, to enable the adventurers the better to obtain the produce.—Mr. Crowder, Mr. Bristow, and Mr. Prideaux, contended that the words of the statute were confined to those erections necessary for the working of the mine, and did not extend to those things by the use of which some of its produce might be made more profitable. The washing these slags was merely an accompaniment, or incident, to produce greater profit than formerly, and, being a penal statute, it must be strictly construed.—The Court were of opinion that the troughs were necessary for rendering the produce of the mine marketable, and must be deemed to be within the meaning of the words.—The rule must, therefore, be discharged.

EAST OF SCOTLAND MALLEABLE IRON COMPANY.—On Tuesday, the annual meeting of this company was held in the Town Hall, Dunfermline. From the report it appeared that the company had lost upwards of 4000*l.* since commencing operations, and that the directors were of opinion that the shareholders should advertise the works to be disposed of, the present company, however, carrying on for six months longer, in hopes of a purchaser coming forward. It was thought that if the works were at once given up, the value of the concern would be greatly lessened. The report was approved of, after much discussion.—[We shall give the report and accounts entire in our next.]

ACCIDENTS.

Boiler Explosion, at Marsland's Foundry, Burnley.—An explosion of a rather serious nature took place on Friday the 1st inst., just before the hands had got in to work from dinner. One of the three boilers which supply steam to the extensive premises blew up—one end being completely driven out; and so great was the force of the explosion, that the boiler-house, a strong massive building, was shattered, and its fragments scattered in all directions. The beam, fly-wheel, and immense hammer of an adjoining engine, were torn from their fastenings, and spread in confusion around the yard. How the explosion occurred is unknown. Had the accident happened a few minutes later, many lives must have been lost. As it is, we fear, one life will be sacrificed—that of James Dugdale, who, at the time of the explosion, was unloading a cart of coals to supply fuel to the boiler. We have heard that his legs are broken, and that there is little or no hope of his recovery. The horse was severely scalded, whilst, fortunately, the fire-tenter, who was helping Dugdale to unload the coals, escaped unhurt. By this accident many persons will be thrown out of employment.

Bilston.—A shocking accident occurred in a pit in Messrs. White and Lester's field: John Wheeler and Michael Garvon were loading a skip, when several tons of coal and rock fell upon them, crushing them in a most frightful manner; death must have been instantaneous.

Durham.—Peter Davis, while blasting coal in the Elemore Pit, was struck on the head by a stone, and killed.—Joseph Hurt was killed, by being struck by the fly-wheel of the engine belonging to his employer, Mr. Coulson, while grinding tools.

Rowley Regis.—An explosion of fire-damp took place, on Tuesday last, at Messrs. Pargeter and Darby's, Dudley Wood Colliery, when four boys, Joseph and Isaac Webster, brothers, Joseph Warwick, and Joseph Griffiths, were killed. A horse was also killed.

Wednesbury.—John Owen fell down a pit at Moxley, belonging to Messrs. Fellowes, and died before he could be conveyed home.

Lewis Mines.—Thomas Richards, aged 24, fell from the 50 to the 70 fm. level, and was killed, on Wednesday last. He was to have been married on the following Sunday.

Drake Walls.—J. Pascoe was killed here, by a large piece of timber falling on him.

LATEST CURRENT PRICES OF METALS.

LONDON, FEBRUARY 5, 1850.

ENGLISH IRON. *a*	*per ton.*		
Bar, bolt, & square, London	£5 15	—6	0
Nail rods	6 15	0	
Hoops	7 15	0	—8
Sheets (singles)	8 18	0	
Bars, at Cardiff & Newport	5	0	—5 5
Refined metal, Wales*	3	5	—3 10
Do. anthracite*	3 15	0	
Pigs in Wales	3	5	0
Do. do. forge	2 15	0	
Do., No. 1, Clyde ... *net cash*	2	9	—2 10
Blew it's Patent Refined Iron for bars, rails, &c., free on board at Newport*	3 15	0	
Do., do., for tin-plates, boiler plates, &c., ditto	4 10	0	
Stirling's Patent Toughened Pigs in Glasgow	2 17	—3	0
Toughened Pigs in Wales	3 10	—3	15
Staffordshire bars, at the works	6	0	0
Pigs, in Staffordshire	3	5	0
Rails	5	5—5	7 6
Chairs	4	0	0
FOREIGN IRON. *b*			
Swedish	12	0—13	0
CCND		—	
PSI		—	
Gourieff		—	
Archangel		—	
FOREIGN STEEL. *c*			
Swedish keg	14 15	0	
Ditto faggot	15	0	0
ENGLISH COPPER. *d*			
Sheets, sheathing, & bolts, *p. lb.*	0	0	10
Tough cake *per ton*	88 10	0	
Tile	£87	10	0
Old copper *e* *per lb.*			8½*d*
Yellow Metal Sheathing			9½*d*
FOREIGN COPPER. *f*			
Russian		—	
ENGLISH LEAD. *g*			
Pig *per ton*	17	0—17	10
Sheet	17	15—18	5
Red lead	18	0	0
White ditto	23	0	0
Patent shot	19	10	
FOREIGN LEAD. *h*			
Spanish, in bond	15	10—16	0
American ditto		—	
ENGLISH TIN. *i*			
Block *per cwt.*	4	5	0
Bar	4	6	0
Refined	4	11	0
FOREIGN TIN *k*			
Banca, H. C.	4	5—4	7
Ditto, for Export only	4	5	0
Straits	4	3—4	5
TIN-PLATES. *l*			
IC Coke *per box*	1	8	6—1 9
IC Charcoal	1	13—1	14
IX ditto	1	18	0
SPELTER. *m*			
Plates, warehoused *per ton*	17	10	0
Ditto, to arrive	17	2	6
ZINC. *n*			
English sheet *per ton*	22	0	0
QUICKSILVER *o* *per lb.*		4*s.*	0*d.*

Terms.—*a*, 6 months, or 2½ per cent. dis.; *b*, ditto; *c*, ditto; *d*, 6 months, or 3 per cent. dis; *e*, 6 months, or 2½ per cent. dis.; *f*, ditto; *g*, ditto; *h*, ditto; *i*, ditto; *k*, net cash; *l*, 6 months, or 3 p. ct. dis.; *m*, net cash; *n*, 3 months, or 1½ p. c. dis.; *o*, ditto, 1½ dis.

* Cold-blast, free on board in Wales.

MONTHLY REPORT.—Iron bars continue steady; Scotch pigs have advanced 1*s.* 6*d.* per ton, and Swedish iron is 20*s.* dearer, and scarce.—Copper has risen ¼*d.* per lb. for sheets, and 4*l.* 10*s.* per ton for cake and tile.—Tin remains stationary, and but little doing.—Spelter has advanced to 17*l.* 15*s.*, but is now decidedly flatter. A sale of 50 tons on the spot has been made at 17*l.* 5*s.*, and for arrival at 17*l.*—Lead has an upward tendency, and the dealers ask 17*l.* 10*s.*, free on board here.

LIVERPOOL, FEB. 8.—The *Canada*, which arrived here from the United States on Monday last, having brought further large orders for manufactured iron, the market here has become even more buoyant than it was before; and this week there has been a large business done in all descriptions, with prices gradually stiffening.

GLASGOW, FEB. 7.—The recent advance in the price of pig-iron induced some holders to realise to a considerable extent, which has occasioned a re-action this week. The market is exceedingly dull, and the price of mixed Nos. may be quoted at 48*s.*, cash.

EXPORTS OF METALS TO ALL INDIA FROM LONDON AND LIVERPOOL,

FOR THE FIRST MONTH OF 1849 AND 1850.

Metals.		1849.		1850.	In. in 1849.	Dec. in 1850.
Spelter	*Tons*	287		68	—	219
Copper		506		497	—	9
Iron, British		1711		3662	1951	—
Ditto, Foreign		—		—	—	—
Tin-plates	*Boxes*	401		2083	1682	—
Lead	*Tons*	180		154	—	26
Steel		—		51	51	—
Quicksilver	*Bottles*	3		—	—	3

THE LEAD TRADE.

The last accounts we gave to our readers of the state of the lead trade were of a most satisfactory character. The large demand we then referred to as having arisen for France, has been followed by the arrival of extensive orders for spring shipment to St. Petersburg, and sales to a considerable extent have been made during the week for that market at improved prices. These sales have so completely exhausted the stocks of the large producers, that they now decline entering into fresh contracts, except at a further advance of 20*s.* per ton upon the rates of the late transactions. This makes the total advance since the month of October last about 2*l.* 10*s.* per ton, and should the present large export demand continue, much higher rates will yet be obtained.

SOCIETY OF ARTS—THE UNIVERSAL EXHIBITION.

A special meeting of the members of the Society of Arts was held last evening, pursuant to a requisition forwarded to the council, for the purpose of ascertaining and considering the position of the society with respect to the Industrial Exhibition of All Nations, proposed to be held in 1851. Mr. TOOKE, a vice-president having taken the chair, called upon any gentleman who had signed the requisition, to state the suggestions and views he had to communicate. A few moments having elapsed in silence, Mr. CHARLES BARLOW said, as a member who had signed the requisition, he called upon the council to inform the meeting of the whole of the proceedings which had taken place since the first proposal for the establishment of the exhibition, as at present the majority of the members were entirely in the dark, and it was generally believed that the whole duty of the council, as a body, had been delegated to a committee of three individuals. He proposed two resolutions, one to the effect, that the steps taken by his Royal Highness, with respect to the exhibition, were worthy his high position and general character, and deserved the warmest support of the members generally, which was carried unanimously; and the other proposed to revoke all the acts of the council with respect to the exhibition, appoint another committee from the body of the members, who should have power to inspect the whole of the minutes of the council, and the correspondence on the subject, and report as to the best means of proceeding in future.

On this some discussion ensued. The CHAIRMAN objected to the course adopted by Mr. Barlow, as he might have obtained, by a courteous request, what he now endeavoured to obtain by an objectionable resolution. The council were not prepared, but might be in a few days, with a satisfactory report of the whole proceedings, which he was satisfied would place them in a very different view than what some gentlemen appeared to take of them.

Mr. ROTCH suggested that he did not think the course pursued by Mr. Barlow was quite free from objection; but he might very soon put himself right by proposing a short resolution, requesting any member of the council to favour them with the required information.—After some little sparring and expressions of adverse opinions among members, Mr. SCOTT RUSSELL, the secretary, was allowed to give the outline of a narrative of the whole proceedings on the subject since 1845, based on the minutes of council, which had been drawn up expressly for the use of his Royal Highness, and which was in his possession. From Mr. Russell's statement, it appeared that the first suggestion for such an exhibition was made by Prince Albert to some of the members in 1845.

At a subsequent meeting of a committee, Mr. Fothergill Cooke moved that a national exhibition be forthwith established, and placed a loan of 500*l.* in the hands of the council; every endeavour was made to carry it out, but it was a complete failure, the public mind not being prepared for such a proceeding, and manufacturers being adverse rather than favourable to the undertaking.

By great exertions on the part of Messrs. Fuller, Cole, Russell, Whishaw, and some other members favourable to such exposition, an exhibition was established at the society's house in 1847, continued in 1848, which 20,000 persons visited; and the one in 1849 showed that a complete reformation in the public mind had taken place, as so numerous were the articles sent in, that repulsion of many was obliged to be had recourse to, and 70,000 persons visited the society's rooms on that occasion.

Mr. RUSSELL then went through the narrative of the proposed Exhibition of all Nations for 1851 from June, 1849, when he first submitted to his Royal Highness that the time had arrived when the proposal might be successfully carried out, up to the present time, which corresponded with the various details have from time to time published in our columns.

Mr. WHISHAW said, that as he had been accused of sycophancy in this matter, he begged to state that it was he who had first suggested the exhibition in November, 1844. He had canvassed a considerable portion of the manufacturers of the country, but had not received sufficient support to carry it out; he must acknowledge, without the aid of Prince Albert, it could not have assumed the importance it had.

Mr. RUSSELL said, he only spoke from what had come under his own knowledge. Mr. Wallace, of Manchester, made such a suggestion as long since 1842; but it was the Prince who first proposed it in its present comprehensive form.—After some conversation, the objectionable resolution of Mr. Barlow was negatived, and an amendment moved by Mr. MURCHISON, and seconded by Mr. ROTCH, requesting the secretary to put his statement corrected to the present time in a form for publication, and to circulate it among the members of the society, was unanimously carried.

It was then resolved, to open a subscription at the house of the Society of Arts in aid of the funds for promoting the exhibition, it being intimated that several of the members were ready to subscribe liberally—some to the extent of 50*l.* or 100*l.*—A vote of thanks was passed to the chairman, and the secretary, and the meeting broke up.

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 7 per Cent., 205½ 6½	Belgian, 4½ per Cent., —
3 per Cent. Reduced Ann., 95½ ¼ ½ ¾	Dutch, 2½ per Cent., 55½ ¾
3 per Cent. Consols Ann., 95¾ ½ ¾ ½ ¾	Brazilian, 5 per Cent., 89 8½
3½ per Cent. Ann., 98 7¾ 8½ 7¾ 8	Chilian, 3 per Cent., 60
Long Annuities, 8½	Mexican 5 per Cent., ex Coup., 28½
India Stock, 10½ per Cent., 268 6	Russian, 5 per Cent., 109 10
3 per Cent. Consols for Acc. 95¾ ½ ¾ ½ ¾	Spanish, 5 per Cent, 18½
Excheq. Bills, 1000*l*., 1½d. 55 58 pm.	Ditto 3 per Cent., 36½ ¾

Mines.—The mining share market, during the week, has been very active and more than an average amount of business has been transacted. For most of our leading mines there has been a demand, and, in many instances, at an advanced price. The reports from the great mining districts represent the mines in a progressively improving position; whilst the gratifying advance in the standard has no doubt given a considerable impetus to general business. Lead has also again advanced, and, from the limited stocks, a further rise may confidently be expected.

Devon Great Consols continue in demand, and business has been done at an advance. At Maria they have cut through the slide, where the lode is worth 100*l*. per fathom.

Treviskey and Barrier shares have been in request at a considerable advance. Several transactions in Penzance Consols have taken place during the week. This mine is progressing fast towards paying dividends. The profit estimated on tin raised in January is upwards of 100*l*, with highly improving prospects.

The Lisburne Mining Company, under the management of Messrs. J. Taylor and Son, declared a dividend of 1000*l*. on Friday—being 10*l*. per share for the months of Nov. and Dec., 1849. The mines are represented as being in a highly profitable position.

At the South Basset bi-monthly meeting, a dividend of 15*l*. per share was declared; leaving a balance of 1180*l*. 7s. 7d. in hand.

At the Tamar meeting it was resolved to keep back the dividends, as profits accrue, until such reserves amount to 10s. per share, when the shares are to be brought in to be endorsed with a 10s. call, and debited wiht a 10s. dividend. This proceeding was decided on as the most desirable mode of raising new capital required to the extent of near 5000*l*. for enlarging the smelting-works, and establishing Patteson's process for de-silvering lead. The mines are represented to be in a highly profitable state; and, although the smelting-works have not been profitable during the past year, hopes are entertained of a renewal of success. The directors have already in hand 2267*l*. 11s. 6d. towards the amount required.

Shares in the following mines have changed hands since our last:—Devon Great Consols, Treviskey and Barrier, Mary Ann, West Providence, Bedford United, South Tamar, Trelawny, Tincroft, Callington, Penzance Consols, Hennock Silver-Lead, East Tamar, Devon and Courtenay, Camborne Consols, Condurrow, Stray Park, Wheal Margaret, Trehane, Daren, North Pool, Wheal Granville, South Basset, Tremayne, Trethellan, East Buller, Tregorden, and Cwm Erfin.

In foreign mines, there has been a considerable amount of business done—in St. John del Rey, Copiapo, United Mexican, National and Imperial Brazilian, Australian, and Worthing, S. A. Guadalcanal and Linares have also been in request, and several transactions have taken place. The report from the Linares is highly encouraging, fully answering the expectations of the proprietary.

Advices have been received by the Imperial Brazilian Company to the 3d Dec.: the details will be found in another column.

The Copiapo report for October has been received, by which we learn that the produce of copper ore for the month amounts to 58 tons, and the mines continue very promising. The silver mines are represented in a highly productive position. The gold mines are also looking very gratifying indeed. A remittance of about 1800*l*. in bar-silver and platina has also been received. The particulars are given under "Foreign Mines," which will be found interesting.

The Alten Mines report from the 10th to the 24th Dec. is given in another column, and which represents the general appearances much the same as last dispatches.

We are enabled to present to our readers, in this week's Journal, a document of considerable interest, being the report read at the half-yearly meeting of the South Australian Mining Association, held at Adelaide, on the 17th October last, at which an elaborate statement of accounts was presented to the shareholders, which we give in another column. From this document it will be seen that the last dividends declared were—

June 1, 1848—Sixth dividend of 200*l*. per cent.	£24,640	0	0
Sept. 1, „ —Seventh dividend of 200*l*. per cent.	24,640	0	0
Sept. 5, 1849—Eight dividend of 100*l*. per cent.	12,320	0	0

The whole of the dividends declared since the working the Burra Burra Mines from Sept., 1845, to 31st Dec., 1847, amounting to 135,520*l*., have been paid out of the clear profit on the ore—the quantity produced in that period having been 18,567 tons, costing, in production, 133,879*l*. 14s. 5d., or 7*l*. 4s. 2d. per ton, and selling for, clear of freight and charges, 296,481*l*. 14s. 1d., or the sum of 14*l*. 10s. 3d. per ton—giving a clear profit of 135,601*l*. 19s. 8d., or 7*l*. 6s. 1d. per ton. The sales of copper and copper ore, from Dec., 1847, to Sept., 1849, have been only 23,986*l*. 8s. 8d., arising, doubtless, from the establishment of smelting works in the colony—to render which available to further profit, they have been storing the ores raised for smelting there. The value of copper and copper ore exported, at Adelaide, at the mines, and on the road, was the sum of 225,433*l*. 11s.—a result unprecedented in modern mining, and which must prove highly satisfactory to the fortunate shareholders. Ten tons of the copper have arrived, per *Cecilia*, in London.

By the Indian mail the metal market of Bombay, to Jan. 2, is represented firm, with more than an average amount of business transacted. The stocks of copper are large, still considerable sales have been effected. Lead and bar iron are scarce. At Calcutta, to Dec. 22, the copper sales had suffered a temporary suspension, in consequence of some local affair at the Bazaar, but an improvement is fully anticipated. In spelter few sales had been effected, and those at a reduction, but there was every appearance of considerable business at advanced prices. Iron had had an extensive demand, and stocks were getting low, consequently an advance in price was anticipated.

Mining in Belgium.—The accounts from Liege and Charleroi state, that every branch of industry is rapidly improving, and the exportations of iron and coal to France during the present year are expected to be be rather considerable. In railways there is more doing than for some years; the works of the Sambre and Meuse line, since the satisfactory arrangement between the company and the Government, are proceeding rapidly.

Quebec Mining Company.—Since we last noticed the affair of the forcible possession taken by the Indians, headed by Allan Macdonell and Wharton Metcalfe, Mr. John Bonner, the manager, has circulated among the shareholders a detailed account of the whole affair, to show that it was impossible for him to have acted, under the circumstances, otherwise than he did. It appears from this statement that, on opening the door, which Metcalfe threatened to force if not opened, the room, 17 feet square, and capable of holding 40 persons, was instantly filled by Indians and half-breeds, armed, and smeared with paint. Allan Macdonnell stood at a table, with a naked scalping-knife in his belt, and Wharton on the other side, with a pistol in his hand, levelled at Bonner. Macdonnell made a speech, informing him that the Indians had resumed possession of their land which the Government had not paid for, and concluded by saying he had come with them to prevent bloodshed. Mr. Bonner proposed that, if he would allow the works to proceed all the winter, he would immediately repair to Toronto, inform the Government, and make it is special business to seek a settlement of the Indian claim. The reply, after consulting the Indians, was, they now held the mines, and would detain them until their claims were settled. He then wanted the sanction of Bonner to a lease from the Indians to himself, which absurd request was indignantly refused. To all the attempts to carry on the works, Macdonnell was inexorable; and, on a careful review of his position, Mr. Bonner found it useless to attempt further negociation; successful resistance was impossible, and he shrank from the responsibility of exposing 160 men, women, and children to the horrors of Indian warfare and cruelty. He, therefore, made preparations for leaving; and, by the fortunate aid of the *Chippewa* schooner, making her last trip for Saut St. Marie for the winter, and an old whale-boat, he succeeded in removing all in safety. It appears the band committing the outrage was composed of half-breeds, and a few Indians from the American side of the Lake; but the most considerable chiefs of the Canada Indians would have nothing to do with the affair, but are willing to remain patient until their claims were recognised and settled. For an indemnification for the losses sustained by the company, they, of course, have a claim on the Government.

Lake Superior Copper Mines.—The produce of the Boston and Pittsburgh Cliff Mine, for the past year, is stated at 1038 tons, which it is calculated will yield at least 750 tons of ingot copper; this estimated at $380 per ton, will give a total of $285,000, while the expense of working has not exceeded $7000 per month, which deducted from the returns will leave a net profit for the 12 months of $201,000, or about 10 per cent. on capital of $2,000,000. In addition to the shipments from this mine, the Minnesota, North-West, North American, and North-Western, will amount to about 200 tons. Next year it is estimated that the exports of copper will be more than doubled. Smelting furnaces are in course of erection at Cleveland, and everything assumes a cheerful aspect.

Wheal Henry and Creegbraws Mines.—The rule *nisi*, obtained in the Court of Queen's Bench, on behalf of Creegbraws adventurers, to set aside an award made as to the extent of the sett, was dismissed by that court on Wednesday week, with costs. We are informed that no further proceedings will be taken on behalf of Creegbraws Mine, so that the adventurers of Wheal Henry will remain in quiet possession of their sett.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price.
1000	Abergwessin	9 ..	6
1024	Alfred Consols	8¾ ..	15
1024	Ashburton United Mines	9½ ..	12
1024	Balleswidden	9 ..	16
128	Balnoon Consols	42½ ..	50
905	Barristown	5½ ..	4 5
3650	Bawden	½ ..	½ ¾
6000	Bealbury	1½ ..	1
4000	Bedford	2½ ..	5 ½ ¾ ½
1280	Birch Tor & Vitifer	10½ ..	6¾ 7
5000	Black Craig & Craigton	3 ..	5
8000	Blaenavon	50 ..	10
5000	Blisland Consols	1 ..	4½
1024	Bodmin Consols	2 ..	2½
5000	Bodmin Moor Consols	1 ..	3
100	Botallack	182 ..	30
120	Brewer	5 ..	2½
10000	British Iron, New, regis.	12 ..	8
—	Ditto ditto, scrip	10 ..	10
2400	Bryn-Arian	2 ..	4
107	Budnick Consols	52½ ..	12
1000	Callington	22 ..	5
1000	Camborne Consols	7 ..	7½
20000	Cameron's Steam Coal	7 ..	1
256	Caradon Mines	22½ ..	10
256	Caradon United	24 ..	5 8
256	Caradon Wh. Hooper	21 ..	4½
1000	Carn Brea	15 ..	115
1000	Carthew Consols	1¾ ..	7
113	Charlestown	220 ..	—
500	Combiawn	5½ ..	4½
128	Comfort	45 ..	65 66½
256	Condurrow	20 ..	95 100
2560	Cook's Kitchen	14 ..	7½
1000	Coombe Valley Quarry	5 ..	5
1000	Copper Bottom	7½ ..	—
900	Court Grange	9 ..	10
212	Craddock Moor	23½ ..	5
128	Creeg Braws	120 ..	30
500	Cubert Mine	12½ ..	—
1000	Cwm Erfin	4 ..	—
1000	Daren	2 ..	3½ 4
7100	Derwent	8½ ..	5
502	Devon & Courtenay Con.	11½ ..	2½ 2¾
1024	Devon Great Consols	1 ..	205 10
1000	Dhurode	2 ..	5
182	Dolcoath	30 ..	17
2560	Drake Walls	5½ ..	2½ 2¾
10000	Durham County Coal	45 ..	5
2000	Dyfngwm	10 ..	15
512	East Alvenney	5½ ..	6
2500	East Birch Tor	3 ..	3
1024	East Buller	1 ..	4½ 5
112	East Caradon	47 ..	47
2048	East Crowndale	7½ ..	1½
128	East Pool	15 ..	65 68
9000	East Tamar Consols	½ ..	1½ 1¾
256	East Tolgus	1½ ..	4½
94	East Wheal Crofty	125 ..	65
128	East Wheal Rose	50 ..	580 600
—	East of Scotland Iron Co.	5 ..	1½
123	East Wheal Seton	14 ..	10
1280	Esgair Lice	2 ..	3
248	Exmoor Wh. Eliza	11 ..	10 12
494	Fowey Consols	40 ..	45
1024	Freidd Llwydd Mines	1½ ..	2½
4000	Gen. Mining Co. for Irel.	1½ ..	1½
2500	Georgia Consols (Tin)	½ ..	½
256	Gonamena	44½ ..	16
128	Goonvrea	4 ..	2
256	Grambler & St. Aubyn	80 ..	6
96	Great Consols	1000 ..	250
512	Gt. Wh. Rough Tor Con.	24½ ..	18 20
6000	Growa Slate Company	5 ..	5
256	Hawkmoor	12½ ..	70
6000	Heignston Down Con.	1½ ..	2
1500	Hennock Silver-Lead	18s ..	6
4500	Hennock Iron & Tin	21s ..	21s
512	Herodsfoot	16 ..	12½ 15
10000	Hibernian	12½ ..	1¾
1000	Holmbush	22 ..	13
1024	Kingsett and Bedford	1½ ..	4 4½
787	Kirkcudbrightshire	8½ ..	4 4½
2048	Lamherooe Wh. Maria	9 ..	4½
252	Lanarth Consols	— ..	7
256	Lelant Consols	47 ..	25 26
160	Levant	— ..	160
1000	Lewis	17 ..	9½ 10
1000	Llwynmalees	9 ..	12
2600	Llynvi Iron	50 ..	50
253	Lostwithiel Consols	23 ..	10
6000	Marke Valley	10 ..	¾ 1
5000	Mendip Hills	3½ ..	3 3½
128	Metha	34 ..	—
20000	Mining Co. of Ireland	7 ..	5¾
256	New East Crowndale	3½ ..	4½ 5
100	North Pool	45	500 510
140	North Roskear	5½ ..	150
252	North Wh. Leisure	1½ ..	2
15000	Northern Coal Co.	23 ..	2
128	Par Consols	55½ ..	650
1248	Pengelly Tin	1 ..	1
8000	Pennant & Craigwen	2½ ..	2
1024	Penzance Consols	22s 3d.	5½ 6
512	Plymouth Wh. Yeoland	6½ ..	6
200	Polsaith Consols	5½ ..	4½
2500	Rhoswiddol & Bacheiddon	10 ..	10
10000	Rhymney Iron	50 ..	18
10000	Ditto New	7 ..	6½
1000	Rosewall Hill	1 ..	5
256	Rosewarva Mines	— ..	12

BRITISH MINES—*continued.*

Shares.	Company.	Paid.	Price.
2048	Runnaford Coombe Tin	1¾ ..	4
9000	South Tamar	¾ ..	3 3½
128	South Caradon	5 ..	200
1100	South Dolcoath	5 ..	¾ 1
256	Sth. Friendsh. Wh. Ann	30 ..	28 30
256	South Molton	7 ..	12 13
300	South Speed	5 ..	5
256	South Tolgus	16 ..	130 135
256	South Trelawny	28½ ..	8
2000	South Wales Mining Co.	1 ..	1
128	South Wheal Basset	20½	475 510
124	South Wh. Frances	160 ..	305
256	South Wh. Josiah	3 ..	3½ 4
1000	South Wh. Maria	2½ ..	1½
10000	Southern & Western, Irish	2½ ..	4
280	Spearne Moor	30 ..	40
94	St. Ives Consols	— ..	80
128	St. Michael Penkivel	5 ..	10½
999	St. Minver Consols	1 ..	6
1000	Stray Park	43 ..	22 23
9600	Tamar Consols	3 ..	7 7½
10240	Tavistock Consols	½ ..	½ ¾
1024	Tavy Consols	6¾ ..	1½
6000	Tincroft	7 ..	12½ 13
58	Tokenbury	170 ..	10
240	Tolcarne	8 ..	15
256	Tregurden	3½ ..	7 8
256	Trehane	1½ ..	31½ 32
5000	Treleigh Consols	6 ..	2½ 3
2000	Trenance	3 ..	—
1500	Trenault Lime Quarries	2 ..	3
96	Tresavean	10 ..	95
120	Trethellan	5 ..	18
120	Treviskey and Barrier	130 170	5 190
512	Trethevy Copper	1 ..	1
1000	Tyllwyd	2 ..	2½
200	United Mines	50	100 150
256	Wellington Mines	25 ..	15
128	West Buller	10 ..	450
256	West Caradon	20 ..	95 100
512	West Fowey Consols	40 ..	12
—	West Par Consols	2½ ..	—
2500	West Polgooth	5 ..	5
512	West Providence	9 ..	15 16
200	West Seton	45 ..	150
120	West Trethellan	5 ..	5
512	West Wheal Frances	1½ ..	8
256	West Wh. Friendship	9 ..	8
3845	West Wheal Jewel	12 2½	2½ 3
256	West Wheal Tolgus	80 ..	7
256	West Wheal Treasury	27½ ..	15
1024	Whiddon Mines	4½ ..	2
5200	Wicklow Copper	5	12¾ 13½
107	Wheal Adams	130 ..	150
1000	Wheal Agar	— ..	6
256	Wheal Albert	10 ..	1
240	Wheal Anderton	28 ..	15 20
128	Wheal Ann	— ..	50½
512	Wheal Anna Maria	7 ..	4
120	Wheal Bal	5¼ ..	10
256	Wheal Benny	14½ ..	2
1024	Wheal Bray	11½ ..	10
232½	Wheal Calstock	9 ..	20 25
248	Wheal Courtenay	20 ..	23
182	Wheal Elizabeth	9 ..	12 14
256	Wheal Fortescue	15 ..	12 13
100	Wheal Friendly	70 ..	66½
388	Wheal Franco	27 ..	11 12
100	Wheal Henry	— ..	30
1024	Wheal Lawrence	3½ ..	3½
112	Wheal Margaret	79 ..	210
512	Wheal Mary Ann	5 ..	32 33
5000	Wheal May	½ ..	2
360	Wheal Oak	25½ ..	5
3000	Wheal Penhale	1½ ..	6
210	Wheal Prospect	4 ..	7
120	Wheal Reeth	41 ..	150
128	Wheal Rose	60 ..	8
198	Wheal Seton	107 ..	240 50
180	Wheal Sisters	35½ ..	13
512	Wheal Sophia	5½ ..	5
128	Wheal Spearne	10 ..	60
128	Wheal St. Aun	30 ..	35
550	Wheal Trescoll	10½ ..	19 20
260	Wheal Trelawny	7½ 87½	90 92½
256	Wh. Tremaine (St. Ervan)	9½ ..	2½
1024	Wheal Tremayne	9½ ..	7½ 7¾
267	Wheal Tryphena	40 ..	40
1000	Wheal Vincent	2½ ..	8
128	Wheal View (Perranz.)	1½ ..	1½
184	Wheal Vyvyan	— ..	60
	FOREIGN MINES.		
5000	Alten Mining Company	14½ ..	2½ 2¾
15000	Asturian Mining Co.	15 ..	2½
20000	Australian	4 ..	5¼ 5½
6000	Barossa Range	1½ ..	½
10000	Brazilian Imperial	23 ..	4¾ 5¼
12000	Cobre Copper Co.	40 ..	31 33
10000	Copiapo Mining Co.	14 ..	4 3½
20000	General Mining Ass'n.	20 ..	13
4000	Guadalcanal	5 ..	1½ 1¾
2000	Ditto Preferential	2½ ..	2½ 2½
5000	Kinzigthal Mining Ass.	2 ..	1½
8051	Mexican Company	59½ ..	—
20000	Mexican & South Amer.	8 ..	1 1½
5000	National Brazilian	30 ..	4¾ 5
104000	N. Brit. Australasian	1 ..	½
7000	Royal Santiago	10 ..	6¾ 7
11000	St. John del Rey	15 ..	13¾
43174	United Mexican ...Av.	28½ ..	5¼ 5½
10,000	Worthing (S. A.)	2 ..	2½

** *We should feel greatly obliged by agents, or others interested, furnishing us with such corrections for our Share List as we may not have received through our usual channels of information—our object being, to present as accurate a list of prices as can be obtained—to procure which, we solicit the aid of correspondents in general.*

RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length. 1850	1849	Present actual cost.	Price p.share	Div. 1849	*Traffic Returns.* 1850	1849
Aberdeen	57	16	1,000,547	12½ 12¼	—	£ 685	£ 359
Belfast and Ballymena	37½	37½	514,968	18½	5*	434	355
Birkenhead, Lancashire, & Chesh.	19	19	1,088,804	37	5†	729	746
Bolton, Blackburn, & West Yorksh.	14	—	786,384	5½	—	442	319
Bristol and Exeter	85½	75½	2,660,490	65 64	—	3265	—
Caledonian	160	141	5,149,320	11¾	3	5740	3777
Chester and Holyhead	100	84	3,358,217	10½	4	1238	1225
Dublin and Drogheda	35½	35½	778,565	27	—	625	670
Dublin and Kingstown	7½	7½	395,915	—	—	975	999
Dundee, Perth, & Aberdeen Junc.	50	47½	544,554	13½	6½	910	910
East Anglian (Lynn to Ely)	91½	67	1,247,446	1½	—	757	656
East Lancashire	75½	24	2,628,519	10½	5	2657	1719
Eastern Counties and Norfolk	322	295	12,027,069	7¾ 7½	—	14097	13602
Eastern Union	95	50½	1,782,703	4½	—	1717	1114
Edinburgh and Glasgow	57½	52½	2,923,199	27½	6	2685	3058
Edinburgh and Northern	78	34	2,241,276	7	2	2050	1552
Glasgow, Paisley, and Ayr	104	74	2,574,330	52½	3	2520	2022
Glasgow, Paisley, & Greenock	23	23	852,846	12½	2	941	916
Gt. Northern & East Lincolnshire	143	—	5,138,756	6¾	5†	2877	1800
Gt. Southern & Western, Ireland	188½	110½	3,552,589	30	6†	3652	3019
Great Western	230½	206½	11,867,042	65½	6½	14196	17829
Lancaster and Carlisle	90	70	1,476,102	51½	4½	2948	1967
Lancashire and Yorkshire	220	127½	10,063,862	56	5¾	10865	10136
Liverpool, Crosby, & Southport	13	—	84,455	5¾	—	—	—
London and North Western	478	428	26,251,635	115½	7	39523	37187
London and Blackwall	5½	4	1,299,675	4½	1-12	603	544
London, Brighton, & South Coast	170	162½	6,502,600	81½	2½	6838	6887
London and South-Western	221	194	7,874,259	67½ 68	5½	7610	7900
Londonderry and Enniskillen	14½	14½	185,739	16	—	119	—
Manchester, Sheffield, & Lincolnsh.	157½	94½	6,598,260	17½	5	4320	2748
Midland Company	483	423½	15,133,779	44½	5½†	19902	18662
Midland Great Western (Irish)	50	36½	725,332	24	4†	1101	1101
Monklands	36	—	486,245	—	6	—	—
North British	135	83	3,649,055	11¾	4½	2954	2162
Scottish Central	45½	—	1,364,228	15½	7	1093	795
Shrewsbury and Chester	48	23	969,618	12½	5	1315	1229
Shropshire Union	30	—	—	3	—	379	—
South Devon	57½	29	1,909,232	5	5	1448	1243
South-Eastern	189½	165½	8,666,007	19¾	5½	8031	6646
Taff Vale	38	40	879,110	—	7½	1703	1888
Ulster	36	36	723,829	45½	—	738	670
Waterford and Limerick	25	—	512,894	—	—	—	—
West Cornwall	13	—	—	—	—	272	207
Whitehaven Junction	12	12	150,879	9½	3	201	—
York, Newcastle, & Berwick	290½	242½	6,827,849	16	7	11006	10821
York and North Midland	260	234	4,983,618	18½	7	6234	6001

CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars .... per oz. £3 17 9	New dollars .... per oz. £0 4 10½
„ Portugal pieces 0 0 0	Silver in bars (standard) 0 4 11½

THAMES TUNNEL COMPANY

The number of passengers who passed through the Tunnel in the week ending Feb. 2, was—No. of passengers, 17,855.—Amount of money, £74 7s. 11d.

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Bate's West Hartley 15 9—Buddle's West Hartley 16—Carr's Hartley 16—Chester Main 15 9—Hasting's Hartley 16—North Percy Hartley 15 9—Ravensworth West Hartley 16—West Hartley 15 9—Wylam 16 6—Eden Main 18—Lambton Primrose 18—Birchgrove Graigola 20—Howard's West Hartley Netherton 16—Perkins's Garnant 23—Wall's-End Brown 16—Bewicke and Co. 17 6—Burraton Killingworth 17 3—Hilda 16 9—Sefton 14 6—Walker 17—Bell 17 6—Belmont 18—Braddyll 18 6—Hetton 19—Haswell 19—Lambton 18 6—Lumley 17 6—Stewart's 19—Whitwell 17—Denison 17—Heugh Hall 17 9—Hetton 17 6—Kelloe 18 6—South Hartlepool 18—Whitworth 15—Adelaide Tees 18 3—Cowndon Tees 17 3—Seymour Tees 17 6—Tees 19—West Cornforth 17.—Ships at market, 277; sold, 42.

WEDNESDAY.—Bate's West Hartley 15 9—Buddle's West Hartley 16—Carr's Hartley 15 9—Hastings Hartley 15 9—Ord's Redheugh 15—West Hartley 15 9—Wylam 17—Wall's-End Brown 16—Bewicke and Co. 17 6—Hilda 16 9—Original Gibson 16 6—Peareth Gas 14—Sefton 14 6—Eden Main 18—Lambton Primrose 18—Bell 17 9—Belmont 18—Haswell 19—Lambton 18 6—Lumley 17 6—Caradoc 18—Cassop 18—Heugh Hall 17 9—Hartlepool 19—Kelloe 18 6—South Hartlepool 18—Thornley 18—Whitworth 14 9—Adelaide Tees 18 3—Cowndon Tees 17 3—Hartley 14 6—West Hartley Netherton 15 9.—Ships at market, 312; sold, 54.

FRIDAY.—Buddle's West Hartley 16—Chester Main 15 6—Hastings Hartley 16—Holywell 17 6—North Percy Hartley 15 6—New Tanfield 15—Tanfield Moor Bute's 14 6—West Hartley 15 9—Windsor Pontop 14 6—Wall's-End Brown's 15 9—Burraton Killingworth 17 3—Harton 17 3—Hilda 16 9—Northumberland 16 3—Eden Main 18—Lambton Primrose 18—Braddyll 18 6—Hetton 19—Haswell 19 3—Lambton 18 6—Lumley 17 6—Stewart's 19—Caradoc 18—Heugh Hall 17 9—Kelloe 18 6—South Hartlepool 18—Whitworth 14 9—Adelaide Tees 18 3—South Durham 17 6—Tees 19—West Tees 17—Hartley 15 6—Sidney's Hartley 16 3.—Ships at market, 357; sold, 58.

THE LONDON IMPORTS OF ORES AND METALS for the week ending Feb. 1 were—

22 tons Antimony ore.	406 slabs Tin, from Calcutta.
25 „ Chrome ore from St. Petersb.	1068 „ ditto from Singapore.
5 „ Lead ore, from Sydney.	194 „ ditto ditto.
1 case Gold.	728 bars Copper, from Valparaiso.
31 boxes Silver, from Bombay.	22813 „ ditto ditto.
4 „ Specie, from Calcutta.	417 pigs Lead, from Alicante.
37 „ ditto from Canton.	2180 „ ditto from Villa Nova.
7 „ ditto from Calcutta.	230 „ ditto from Cadiz.
1 barrel ditto ditto.	5949 plates Zinc, from Stettin.

49 casks ditto, from Ostend.

THE LIVERPOOL IMPORTS, in about the same period, were—

13 tons Copper ore, from Mazatlan.	143 bags Cobalt ore, from Valparaiso.

For the week ending February 6:—

1 ton of copper ore, from Calcutta	34 bars iron, from New York
140 barrels of chrome ore, from New York	10 bars scrap steel, ditto
50 ditto ditto	180 tons of copper, from Valparaiso
5 boxes cobalt ditto	

LEAD ORES

Sold at Bagillt, on the 2d of February.

Mine.	*Tons.*	*Price per Ton.*	*Purchaser.*
Conlig	75	£11 3 0	Newton, Keates, & Co.
ditto	7½	11 16 0	J. P. Eyton.
		Sold at Liskeard.	
Trelawny	96	£18 15 0	Walker, Parker, & Co.
ditto	42	6 0 6	ditto
Herodsfoot	75	13 0 0	ditto
		Sold at the Mine.	
East Wheal Rose	77	£14 8 6	Sims, Willyams, & Co.
ditto	60	13 18 6	ditto
ditto	53	13 18 6	ditto

BLACK TIN.

Mine.	*Tons.*	*Price.*	*Purchasers.*
Drake Walls	4	£49 12 6	Bisoe Company.
ditto	2½	44 15 0	Daubuz.
Mineral Court	Tons 1 10 1 27	55 5 0	Ditto.
ditto	0 3 2 11	36 0 0	Ditto.
ditto	0 5 1 22	55 5 0	Ditto.

COPPER ORES.

Sampled Jan. 23, and Sold at Andrew's Hotel, Redruth, Feb. 7.

Mines.	*Tons.*	*Price.*	*Mines.*	*Tons.*	*Price.*
Carn Brea	94	£5 14 6	Levant	88	£6 11 6
ditto	86	6 12 0	ditto	60	3 10 0
ditto	82	7 11 0	ditto	52	8 1 6
ditto	79	8 16 6	Wh. Buller	80	10 2 6
ditto	71	4 16 0	ditto	79	5 15 6
ditto	69	10 9 0	West Wh. Treasury	70	7 12 6
ditto	67	5 10 6	ditto	50	4 6 6
ditto	65	5 10 6	Wellington Mines	55	5 15 6
ditto	56	6 13 0	ditto	33	8 1 6
ditto	39	3 3 0	ditto	25	3 10 6
ditto	20	12 16 6	Wh. Mary	51	6 12 0
Tywarnhayle	70	4 1 6	ditto	50	3 15 0
ditto	61	8 12 6	West Wh. Seton	46	4 18 0
ditto	60	2 18 6	ditto	36	6 7 0
ditto	53	4 5 6	Wh. Agar	44	4 6 0
ditto	45	3 11 6	South Wh. Fortune	36	5 14 6
ditto	40	3 14 0	ditto	4	3 1 0
ditto	25	4 9 0	Wh. Tremayne	35	3 14 0
ditto	20	4 16 0	Alfred Consols	18	6 0 0
Nancekuke	71	4 2 0	ditto	14	10 14 0
ditto	12	2 19 0	Michell's Ore	22	4 18 0
Par Consols	101	8 6 0	Wh. Prosper	18	2 6 6
ditto	80	7 5 0	Trenow Consols	4	6 2 0
ditto	72	7 19 6			

TOTAL PRODUCE.

Carn Brea	728	£4962 11 6	West Wh Seton	82	£454 0 0
Tywarnhayle, Nancekuke	457	2056 1 6	Wh. Agar	44	189 4 0
			South Wh. Fortune	40	218 6 0
Par Consols	253	1992 10 0	Wh. Tremayne	35	129 10 0
Levant	200	1208 10 0	Alfred Consols	32	257 16 0
Wh. Buller	159	1266 4 6	Michell's Ore	22	107 16 0
West Wh. Treasury	120	750 0 0	Wh. Prosper	18	41 17 0
Wellington Mines	113	672 4 6	Trenow Consols	4	24 8 0
Wh. Mary	101	524 2 0			

Average Standard............£110 6 0 | Average Produce.................. 8½
Average Price per ton £6 3 0
Quantity of Ore ....2408 tons | Quantity of Fine Copper, 194 tons 14 cwts.
Amount of Money £14,885 1 0
LAST SALE.—Average Standard......£114 3 0.—Average Produce........ 7½
Standard of corresponding sale last month, 106*l*. 7s.—Produce, 8½.

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal	180	£1215 7 0
Vivian and Sons	546	3340 16 2
Freeman and Co.	233	1478 19 6
Grenfell and Sons	382	1829 10 3
Crown Copper Company	2	6 2 0
Sims, Willyams, and Co.	289	1647 2 9
Williams, Foster, and Co.	543	3945 14 8
Schneider and Co.	233	1391 8 8
Total tons	2408	£14,885 1 0

NO SALE on Thursday next, Feb. 14.

Copper ores for sale on Thursday week, at Andrew's Hotel, Redruth.—Mines and Parcels.—Devon Great Consols, Wheal Josiah, Wheal Maria, Wheal Fanny, and Wheal Anna Maria, 1320—West Caradon 286—Wheal Basset 235—Fowey Consols 229—Marke Valley 193—Wheal Friendship 159—Bedford United Mines 115—West Wheal Jewel 70—Holmbush 56—Phœnix Mines 51—Wheal Pink 49—Gonamena 33—East Downs 10.—2806 tons.

MINING APPOINTMENTS FOR FEBRUARY.

9. Spearne Consols and Par Consols—pay.
11. Penzance Consols and Seton—account. Par Consols—sampling.
12. Fowey Consols—account.
13. Wheal Mary—account, on the mine. United, South Caradon, and other mines—sampling.
14. No copper ore ticketing this week.
15. Levant—tutwork pay. Budnick—pay.
16. Fowey, Prideaux Wood, and Treviskey—pay.
18. Condurrow—account, on the mine. Fowey Consols—sampling.
19. East Pool—account, on the mine.
20. North Roskear, North Pool, and other mines—sampling.
21. Ticketing at Redruth. Devon Consols, and other mines.
22. Balliswidden—setting and pay. North Pool—pay. East Crofty—setting.
23. Tresavean, Trethellan, Grambler, Seton, North Roskear, South Frances, Fowey Consols, Agar, Consols, United, Comfort, West Seton, West Wheal Buller, and Condurrow—pay. Levant—tribute pay.
25. Par Consols—sampling.
26. North Pool—account, on the mine.
27. Balleswidden and Spearne Consols—account. Carn Brea, &c.—sampling.
28. Ticketing at Lenderyou's Hotel, Truro. United and other mines.

NOTICES TO CORRESPONDENTS—(*Continued*).

Reviews of Mr. Bridges' pamphlet on Freehold Assurance, and Turner on Copyright in Design in Art and Manufactures, will appear in our next,—when, if Mr. Pulling forwards a copy of his work, it will also be noticed.

We are compelled again to postpone Mr. Hopkins's paper on Gold-washing Districts; Mr. Shepherd, on the Arctic Expedition; Mr. Baggs, on Hot Air *v.* High-pressure Steam; Dr. Murray's letters, on the Aneroid Barometer, Sir John Herschel's Proposed Plan for the Formation of Ice, and on Ventilation.—Reports of the meetings of the London and County Joint-stock Bank, and the Caledonian Railway, are also postponed.

British Mining Interest.—The following additional subscription for Mr. Sharp has been received:—Sandys, Vivian, and Co. (Hayle), 5*l*.

"An Adventurer" (Tavistock) had better himself apply to Capt. Carpenter, and point out "the propriety of obtaining a report from a disinterested agent respecting Wheal Anderton to satisfy distant shareholders, who are now becoming impatient, and begin to express dissatisfaction."—We will insert it, if forwarded.

NOTICES TO CORRESPONDENTS.

*** We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

"Civil Engineer" (Rhondda Valley).—The process for manufacturing Mr. White's patent hydro-carbon gas is as follows:—In one set of retorts is placed a quantity of charcoal and scraps of iron, which are brought to a bright red heat, and water allowed to fall upon them drop by drop, by which the water is decomposed, the carbon and iron taking up the oxygen—the hydrogen being set free. In another retort, resin, tar, or other hydro-carbon, is decomposed, by passing it through a mass of iron chains; and from the water, and 500 of carburetted hydrogen from the hydro-carbon. Mr. White has stated that, with every expense, carefully calculated from practical experience, in the large way (say) above 300,000 cubic feet per day; it can be made at 1s. per 1000 ft. It is now getting into extensive operation in the large manufactories in the midland counties; the Broad Plain Soap-Works, Bristol—the largest in the kingdom—are lighted with it; the town of Southport; Parkhouse, near Edinburgh; and the appartments is being erected at the South Metropolitan Gas-Works, Old Kent-road, Surrey.

Institution of Mechanical Engineers.—In the mention, in the last *Mining Journal* of a paper on Condensing Engines, read by Mr. W. Smith, at the meeting of this institution on the 23d Jan., there is an error in the amount stated of total annual loss, which should be 180,000*l.*, instead of 280,000*l.*—William P. Marshall, Sec.

"A Young Miner" (Helston).—We have repeatedly stated, and the practice is specifically recognised by the customs of the Stannary Courts, that a principal feature in the Cost-book System is, the power possessed by individuals, if they feel dissatisfied with the adventure, to relinquish their shares, and get rid of all liabilities, by paying their share of any outstanding debts, and all costs up to the day of relinquishment. It is a right inherent in the system, and does not depend on the vote of a meeting of shareholders. The relinquisher is also entitled to his share of the value of the assets.

Metals in Sea-Water.—The paragraph on the presence of lead, copper, and silver in sea-water, was taken from a paper, by MM. Malaguti, Durocher, and Sarsean, in the *Comptes Rendus*, of the 26th December.

Q." (Tavistock).—The insertion of the letter would subject us to an action for libel—a position we certainly do not intend being placed in, to oblige an anonymous correspondent. We know nothing of the "mysterious man." Address the directors of the company, who, as shareholders, must feel interested in checking the practices you refer to—if they exist, which we doubt.

"Britannicus" (Philippeville, Belgium).—Parts of the coal fields of Northumberland and Durham are concealed by the over-lying magnesian limestone, which attains a thickness of 500 ft.; but the lead and zinc ores of Northumberland, Cumberland, &c., are found in the carboniferous or mountain limestone. The depth of the coal seams of the great northern field vary from 400 or 500 ft. to that of Monkwearmouth Colliery, near Sunderland—the depth of which is 229 fms., or 1794 ft. from surface, being the deepest excavation in England. The geological maps, under the survey of the Ordnance Department of Government, can be obtained through Mr. John Weale, the publisher, High Holborn.

"Y." (Old Broad-street).—We never answer questions respecting the value of mining property; as by so doing we should be continually involved in endless difficulty, from presumed influence, or imagined inclination to favoritism for particular adventures—or, perhaps, adventurers. We recommend all who purpose embarking, previous to doing, to consult some respectable broker, who will either give or obtain such information as will place the affairs of the concern in, at least, an *understandable* position, so that the intending shareholder can know in what he intends to embark.

"G. L." (Hounslow).—The Company of Mines Royal was first incorporated in the reign of Queen Elizabeth. During the last century it was amalgamated with the Mineral and Battery Works. It is a close corporation, and has much deteriorated from its original influence and significance. The annual meeting was held on the 6th Dec., but as they give no publicity to their proceedings, we are unable to furnish our correspondent the required information.

Charcoal Pig-Iron.—We have been requested to inform "A Subscriber" (Salford), that any moderate quantity of this article can be obtained by applying to the Indian Iron and Steel Company, King's Arm's-yard, Moorgate-street. "The price we believe to be 5*l.* 10*s.* per ton; the quality quite unexceptionable." Application can also be made to Mr. Henry Hughes, Abbey Tintern Works, near Chepstow; the Consett Iron Works, Shotley Bridge, Gateshead;—

TO THE EDITOR OF THE MINING JOURNAL.

Sir,—We perceive that you have had an inquiry about charcoal pig-iron, and beg to inform you that we are the only makers of that article in Britain, and shall be glad to supply any respectable party with it at 7*l.* 10*s.* per ton, net cash, delivered in Liverpool. We also continue to refine our charcoal pigs into slabs or blooms in charcoal refineries, and produce a very superior article in that way. Having the purest hematite ores in Britain, and using nothing but the best fuel, the superiority of the iron so produced, may readily be inferred. The price is necessarily high, which, in these days of low prices, accounts for a limited demand. Harrison Ainslie and Co.

Newland Furnace, Ulverston, February 4.

E. G. Beverley (Leeds).—Platinum is at first positive towards graphite, neutral after several immersions, then negative. The graphite remains unaltered, but the platinum is rendered positive towards other platinum, losing this property, however, by immersion in boiling water, or ignition. Gold and silver exhibit similar relations towards graphite, but in a lower degree. When platinum, gold, or silver is immersed in contact with graphite till it ceases to produce deflection of the needle, and then, while still remaining in the acid, connected for a short time with zinc, it again becomes positive to graphite. Possibly, when these metals are placed in contact with graphite, a portion of oxygen becomes fixed upon them, and renders them more negative; and when they are connected with zinc, this oxygen is removed by the hydrogen, the latter then accumulating on the surface of the metal, for platinum which has been in contact with zinc under dilute acid, is positive towards platinum which has not been so treated.

*** It is particularly requested that all communications may be addressed—

To the Editor,
Mining Journal Office,
26, Fleet-street, London.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL
Railway and Commercial Gazette.

LONDON, FEBRUARY 9, 1850.

The Mining Journal is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

The intelligence from the mining districts of England and Wales, so far as it has come to hand during the week, represents the course and tone of business, both in produce and shares, as still active and improving. Our observation and private communications on the same subject confirm the favourable representations thus made; in point of fact, there is nothing in the horizon all round—search it however carefully we may—that can hinder the steady and successful progress of mining adventure for some time to come. As a busy working people we address ourselves to the tasks by which our forefathers have thriven, and by which we reckon most confidently that we shall continue to thrive also. As parts of an illustrious and enriched community, the operative classes are giving themselves to their separate departments of labour, with a diligence, and a consequent success, which has never been much exceeded, and which there is every reason to believe will be sustained and perpetuated throughout the year, which is yet so young, as that its blossoms and its fruits, either in a national or a social sense, have not begun distinctly to unfold themselves. The accumulation of the precious metals, and the favourable course of the foreign exchanges, continue to keep money cheap, and to make the public funds, as well as the great staple branches of our merchandise, buoyant and remunerative; this, as one of its first consequences, feeds and elevates the price of labour; and we have every reason to believe, that, taken as a whole, the industrious classes of the kingdom have not been in more general occupation, or enjoyed more general contentment for many years than they are enjoying at this moment. We are able to speak more confidently of the mining population of the kingdom than of any other, because we are most among them, and have before us, more or less, continually the vicissitudes of their provincial history. It is principally of them that we have great pleasure in saying the state of business, considered in its leading features, is satisfactory and still improving, and what is thus true of them, is true at present as a universal statement.

The movement, which was much accelerated by the recent presence of a fatal epidemic amongst us, and whose course is still further quickened by the interest which the higher classes are taking in its successful progress, is one upon which we look with no common pleasure, and no very subdued thanksgiving. It is one of the duties which the opulent and the well-to-do owe to their poorer brethren, and which, though heretofore they were slow to discharge, there is now a good prospect of their conceding largely, and with interest. Their making the dwelling-places of the poor wholesome and convenient, and their contributing as fully as they can to make the poor man's home a spot to him of rational recreation and attraction, are tasks which should call the great people from their sumptuous retirements, and send them forth as harbingers of health and comfort to the sick and the forlorn. How vast a reputation, and how blooming a wreath the illustrious Howard has won, by a course of philanthropic activity, the whole of Christendom knows not a more enlarged and greater self-sacrifice than this; and if our nobles and gentry will tread in a path not wholly dissimilar to his, by carrying health and cheerfulness into the 10,000 caverns even in London, which are calling for it, they will do more to draw together, and to cement into one brilliant structure, the now crumbling parts of the social temple, than education and all the apparatus of the schoolmaster and the legislator combined will be able to accomplish in a cycle of years. The wealthy classes of the metropolis are at length at work at these good tasks, and we doubt not that the forsaken, the forgotten, and destitute, will be made to feel the value of, and assisted in, those branches of domestic reformation, which so mainly and so vitally affect their health, their comfort, and their character.

To a public journalist few circumstances can give greater satisfaction than to see the triumph of a measure which he has for years been advocating against prejudice or ignorance. We have, in this Journal, advocated, and at no little personal sacrifice exerted ourselves to promote the formation of a Public Mining School in this country. For years our proposals have been thwarted by the spirit of "*laissez faire*," operating as a check to the advance of improvement, or the application of science to the development of the mineral resources of our country. Our repeated advice would probably have long yet remained unheeded, but *stern necessity*, the ever faithful friend of improvement and invention, now presses the movement forward.

The competition of other nations—the long depressed state of the coal and iron trades, as also, we trust, to some extent, a far nobler cause, the growing intelligence and civilisation of the age, are stimulating the mining interest of this country; and we find from Durham and Newcastle, Yorkshire, Derbyshire, Lancashire, Staffordshire, South Wales, and other manufacturing districts, memorials, either already presented, or now in progress, urging upon the Government the establishment of Mining Schools in this country. We shall not at present discuss the detailed arrangements we believe necessary for the success of these schools when established, but at the proper time we shall not be found wanting.

The present movement we hail with pleasure, and cannot doubt its success. We give herewith a copy of one of these memorials, now in course of signature in South Wales—its strictly business character, as also some of the statistics, may interest our readers:—

To the Right Hon. Lord John Russell, &c., the First Lord Commissioner of Her Majesty's Treasury,—

We, the undersigned, landowners, mineral proprietors, iron and coalmasters, and manufacturers, directly interested in the mining resources and industry of the counties of Monmouth and Glamorgan, or other parts of Wales, comprised in the district known as the South Wales Coal-Field, beg respectfully to memoralise your Lordship on the subject following:—

The South Wales Coal-Field comprises an area of about 1000 square miles, and from this more than 6,000,000 tons of coal are raised annually; of this coal nearly 2,000,000 of tons are exported by sea, and the remainder is principally consumed in the manufacture of iron, copper, and tin-plates. In this district more than 600,000 tons of pig-iron are annually made; four-fifths of all the copper ore raised in the whole world is smelted, and three-fourths of all the tin-plates, supplying the export and home consumption of this country, are manufactured.

The population of the counties of Monmouth and Glamorgan, in 1801, was 117,000—is now more than 400,000, and the ratio of increase rapidly augmenting.

The annual value of the mineral produce of this district, created or developed, by the application of labour alone, exceeds 7,000,000*l.* sterling.

The prosperity of this district, and its value as a wealth-producing portion of Great Britain, depend upon the right direction of its labour; and it is consequently of the greatest importance that those who direct that labour should receive every facility for acquiring knowledge to fit them for the discharge of their duties in the most efficient manner.—The scarcity and want of competent and skilful mining engineers is generally felt and acknowledged; serious accidents and loss of life in the mines are of frequent occurrence; and on reference to the able reports upon "Accidents in Mines," made under the direction of her Majesty's Government, by Sir H. de la Beche and others, it will be seen that nearly all the accidents investigated might have been avoided by skilful management.—The waste of property in this district, produced by unskilful working of mines, is a serious loss to the national wealth, as well as to the mineral proprietors.

The increasing depth and extent to which the mines are now worked, require proportionate skill and experience for the right direction of the labour.

In France, Germany, and other European states, schools have been established by their respective Governments, to educate and train competent mining engineers to supply the requirements of their several mining districts. Under the British Government, although its mineral wealth far exceeds that of the whole of Europe, no means are afforded by the Government to encourage or assist in training men to direct the mining labour; no schools are established for this purpose, and there are at present no means in this kingdom whereby any man can publicly acquire a knowledge of scientific and practical mining.

Your memorialists gratefully acknowledge the services to the mining interest of the geological survey of this country, and also the convenience of the Museum of Practical Geology; and your memorialists take the liberty to suggest, that the latter institution may easily be so organised as to be made available for further educational purposes.

Your memorialists would, by these previous explanations, respectfully pray your Lordship to introduce the subject of this memorial to her Majesty's Government, and to take such measures as your Lordship may see fit to recommend for the establishment of a public mining school in this country. Your memorialists will ever pray, &c.

The case, so ably made out in the above, requires no present comment from us; we urge and advise the miners in other districts where such memorials are not already in progress, forthwith to "go and do likewise."

In our last Journal, we made some general observations on the charges which have been brought against the directors of the Sr. John del Rey Mining Company, as to their being cognizant of, and supporting, a system of inhuman treatment towards their negroes, and gave a general outline of a lengthy statement issued by them in reply and justification. We have since received a communication from Mr. John Routh, the managing director, requesting the insertion, *entire*, of a general report of the stated working of the blacks in the different departments of the mine, signed by G. D. Keogh, superintendent; W. H. Richards, store-keeper; H. Bint, surgeon; T. Treloar, chief mining agent; J. Smyth, manager of blacks; A. W. Sandilands, reduction officer; J. C. Buchwald, cashier; and John Rouse, chief mechanic.

Although we do not exactly see the necessity for this occupation of our space, we should probably have inserted it had it reached us at an earlier period of the week; but, as it is, we can only give its principal features. The report commences with a detail of the work performed by the negroes, consisting of borers, borers' assistants, timbermen's assistants, and smiths. The borers are stated to be all picked men, and continually inspected by the medical officer, to ascertain that their health and strength are equal to this description of work; they are divided into two corps, one entering the mine at 6 A.M., the other at half-past 5 P.M.

In favourable stone on the stopes they are required to bore two holes 48 to 56 in. deep per pair, who relieve each other in using the hammer, and holding the boyer. On the side of the lode, where stages have to be erected, one hole only is exacted. Strict injunctions are given that the task is not greater, according to the hardness of the ground, than can be got over in six or seven hours. The borers' assistants, such as stope-clearers, kibble-fillers, trammers, &c., work 10 hours; and if in consequence of breakages they are detained over their time, they are paid extra. The men are, however, in such cases changed, that the work may not be too arduous. The task for the smiths is to steel 6 dozen, or sharpen 15 dozen boyers per day, which may be done in seven or eight hours. On Monday mornings, the corps which is to work at night perform four hours light work at surface.

In the reduction department the women break from 1 to 2½ loads of stone per day, which may generally be performed with facility in nine hours, and when accustomed to it, may finish their week's work by Friday evening, or early on Saturday morning. Sledge-men, stamps-men, and women, general surface blacks and mechanics, work respectively from 11½ to 12 hours, with 1½ hours for meals, and when contingencies occur, which will happen on all large mining establishments, overtime is always paid for. All the negroes on the completion of their work, are masters of their own time until half-past eight at night, when every one must be in his or her apartment. Many of them cultivate small plots of ground, which is invariably granted to such as ask for them, and dispose of the produce, after supplying their own wants, by which many of them make a good deal of money; others turn their attention more to pigs and poultry, by which much profit is made. Permission is given to go frequently to the village, to make purchases, and every facility given to amuse themselves moderately. Their food is ample, and of the best kind, three good meals per day; their clothing supplied in abundance; they are well housed, warm baths may be had at all hours of the day or night, and strictly and kindly treated during illness, and a better proof of their orderly and moral conduct could not be given, than the fact, that three overseers are sufficient, as policemen, to quell all disturbance among 1100 people residing together, which is, indeed, of rare occurrence. The report concludes thus:—

The negroes know they are well-fed, well-clothed, treated during illness, and, when too old to work, that every care continues to be taken of them; they have, therefore, no thought for the morrow—no fear of leaving widows or orphans destitute, nor of starving in their old age; but can devote their entire earnings to their present enjoyments. A clergyman is kept on the establishment for Divine Service on Sundays; and, during the week, he instructs the adults, as well as children, in their religious duties, and affords spiritual consolation to such as may require it in the hospital, which he visits daily. We will now conclude, by expressing our firm conviction that every unprejudiced mind must acknowledge, after becoming acquainted with the treatment of the slaves at Morro Velho, that nothing is left undone that humanity can suggest, both for their present and future welfare.

In the Mining Journal, of 19th January last, we gave an outline of the Report of the Commissioners, appointed by Government in August, 1847, to make investigations into the effects of concussion and vibration on iron, and to examine the action of weights moving over railway bridges. The introduction of the railway system has led to the introduction of monster trains, carrying enormous loads, drawn by ponderous locomotive-engines, and in the previous absence of all scientific inquiry into the strength of materials, and their power to bear loads which it was never thought possible to move in the aggregate; the due proportion of thickness of metal to the width of span in girder-bridges was little more than guessed at, and most deplorably fatal accidents to human life and destruction of property have been the result. The duties of this commission thus opened up an inquiry into the properties and strength of iron of an entirely novel character, and a mass of evidence has been obtained, which, although far from enabling the commissioners to come to any decisive conclusion, as to certain mixtures of different irons, and forms most properly available for certain constructions, has yet laid a sound basis for future inquiry, and in the meantime throws very considerable light on the construction of iron bridges, which will generally be of the greatest service to the engineer and the public.

In trying the strength of cast-iron bars, they were subjected to the action of a weight raised by a revolving cam, worked by a steam-engine. By this they were quietly depressed in the centre, and allowed to restore themselves, the process being continued to the extent of 100,000 periodic depressions each bar, at a rate of 4 a minute. Another contrivance was tried, by which the whole bar was also, during the depression, thrown into a violent tremor. The results were, that when the depression was equal to one-third of the ultimate deflection, the bars were not weakened. When, however, the depressions were one-half the ultimate deflection, the bars were actually broken by less than 900 depressions—thus coinciding with the now-received opinion of the crystallising of railway axles from continuous transverse concussion and abrasion. By other machinery, a weight equal to half the breaking weight was slowly and continually dragged backwards and forwards from one end to the other of a bar of similar dimensions to the above. A sound bar was not apparently weakened by 96,000 transits of the weight. It is, therefore, concluded, as far as the effects of reiterated flexure are concerned, cast-iron beams should be so proportioned as scarcely to suffer a deflection of one-third their ultimate deflection; and as the deflection produced by a given load, if laid on the beam at rest, is liable to be considerably increased by the effect of percussion as well as by motion imparted to the load, it follows that, to allow the greatest load to be one-sixth of the breaking weight is hardly a sufficient limit for safety, even on the supposition that the beam is perfectly sound.

From experiments on the mechanical effects of percussions and moving weights, it appears that bars of cast-iron, of the same length and weight, struck horizontally by the same ball, offer the same resistance to impact, whatever be their transverse section, provided the sectional area be the same; thus, a bar 6 in. by 1½ in., placed on supporters 14 ft. asunder, required the same force to break it as did one of the same length, whose sectional area was a square of 3 in. With other experiments as to the power of cast-iron bars to resist impact, it was found that bars, loaded to a certain degree with weights spread over their entire length, and so attached as not to prevent the flexure of the bar, resisted greater impacts from the same body falling on them than when the beams were unloaded in the ratio of two to one. To compare the mechanical effect produced by weights passing with more or less velocity over bridges, an apparatus was constructed, by means of which a car, loaded at pleasure with various weights, was allowed to run down an inclined plane, the iron bars to be experimented on being placed at the bottom of the plane horizontally, in such manner that the loaded car would pass over them through the velocity acquired in its descent. The apparatus was on a sufficiently large scale to give a practical value to the results; the inclined plane was 40 ft. above the horizontal bars, on which a pair of rails, 3 ft. asunder, were laid for the transit of the car, which could be loaded to 2 tons. The trial bars were 9 ft. in length, and there were contrivances for registering the deflections and velocity. The latter was, of course, limited by the incline plane, the greatest being 43 ft. per second, or 30 miles an hour. The general result obtained from the effects of different velocities on bars of various dimensions was, that the deflection produced by a load passing along the bar was greater than that which was produced by placing the same load at rest upon the middle of the bar, and that this deflection increased as the velocity was increased. When the carriage, loaded to 1120 lbs., was placed at rest upon a pair of cast-iron bars 9 feet long, 4 inches broad, and 1½ inch deep, a deflection of $\frac{7}{10}$ths of an inch was produced, but when the velocity was increased to 10 miles per hour, the deflection was increased to $\frac{9}{10}$ths; and at 30 miles it became 1½ in. It also appeared that, when motion was given to the load, the points of greatest deflection, and still more of greatest strains, did not remain in the centre of the bar, but were removed nearer to its remote extremity. When broken by a travelling load, the bars were always fractured at points beyond their centres, and often broken into four or five pieces, thus indicating the great and unusual strains they had been subjected to.

These experiments will prove of immense importance to future engineering works, more especially in the estimates for the degree of strength required in bridges, viaducts, &c., inasmuch as it would appear that the general impression of engineers has hitherto been at variance with the above results, it having apparently been the general opinion that the deflection caused by passing a weight at a high velocity over a girder is less than the deflection which would be produced by the same weight at rest; even when they have observed an increase, they have attributed it solely to the jerks of the engine, or train, produced by passing over inequalities at the junction of the rails, or other similar causes.

TIMBER USED IN MINES, &c.

In the House of Commons, on Monday evening, the following returns were ordered, on the motion of Mr. Wyld:—

Return of the drawbacks of duty granted upon timber used in copper, tin, lead, and other mines in England, Scotland, and Ireland, respectively, in each year from the period of their first allowance to that at which they were finally discontinued; specifying, in each case, the full rate of duty payable upon such timber; the proportion or per centage of such duty granted in the nature of drawback, and the amount of such drawback in each year; also, stating the dates and titles of the Acts of Parliament under which the said drawbacks were first allowed, and finally discontinued; and of any other Acts of intermediate dates specifically applicable thereto.

Return of the drawbacks of duty granted upon timber used in making casks, or otherwise in any way connected with the fisheries, in England, Scotland, and Ireland, respectively, in each year, from the period of their first allowance to that at which they were finally discontinued, if not still allowed; specifying, in each case, the full rate of duty payable upon such timber; the proportion or per centage of such duty granted in the nature of drawback, and the amount of such drawback in each year; also, stating the dates and titles of the Acts of Parliament under which the said drawbacks were first allowed; and when the same were discontinued, if not now allowed; and of any other Acts of Parliament specifically applicable thereto.

The High Level-Bridge over the Tyne is now completed, both for passengers and railway purposes.

Gold in Sarawak.—The *Journal of the Indian Archipelago* publishes the following important announcement, contained in a letter dated Sarawak, Nov. 2:—"The rains at the beginning of this month of last year fell in great quantities in Sarawak, and a considerable portion of the face of a mountain, called Trian, was washed down into the plains below. The deposit was found to abound in gold, and afforded work for fully 2000 men for about a month or six weeks, and it was reckoned that, at the smallest average, they procured a bunkal a month per man. The gold was in lumps, and not in dust, and several of the lumps weighed from three to four bunkals, and they were rarely less than one or two annas in weight. This fact may, in the locality, lead at some future day to important conclusions; and I am induced to notice it as it corroborates the statements in Mr. Low's work, and, at the same time, is contrary to the received opinion, and the experience of the workings in the Brazils, where gold is rarely to be traced to the gold neighbouring mountains."

IMPROVEMENTS IN IRON FURNACES.

[Abstract specification of patent granted to Benjamin Thompson, C.E., of Newcastle-upon-Tyne, for improvements in the manufacture of iron. Inrolled Feb., 1850.]

This invention relates to certain improved arrangements of the furnaces employed in the manufacture of iron, the object being two-fold—to withdraw the gaseous products from the furnace, and thus to supply air to the furnace by means of indraught, and to dispose of the gaseous products evolved from the furnace.

The furnace is constructed similarly to the ordinary blast furnace, except in this, that at the upper part of the body, near the throat, are passages leading to a tunnel or gallery, formed in the brickwork passing around the throat, and proceeding from this tunnel are two elbow pipes, communicating with the atmosphere; into these pipes are introduced, from below, smaller pipes, which convey jets of steam into the same, as these smaller pipes communicate with a steam-boiler, situate at the back of furnace. A hinged cover is placed at the top of the furnace, to prevent the entrance of air at top thereof.

Instead of having a steam-boiler at the back of the furnace, the same effect may be produced by having a lofty chimney, with which the elbow pipes, before described, are made communicate, for the purpose of exhausting the air. The pipes may, if preferred, be made to communicate with an apparatus, in which the power of the archimedian screw is adopted, for the purpose of exhausting the air from the furnace. To dispose of the gaseous products evolved from the furnace, the elbow pipes are made to join a main pipe, by which they are conveyed to a steam-boiler, or hot-air chamber.

Patent Office, 210, *Strand*, *Feb.* 8, 1850.

SCOTCH PIG-IRON—SPECULATION.

[FROM A CORRESPONDENT.]

In November last commenced a movement, having for its object an increase in the price of pig-iron, the parties concerned calculating on an active demand for spring export; this, with the previous speculative advance, they considered certain to result in large profits on the purchases which they effected on rather a grand scale since the period named; not only did they attempt to monopolise the whole business here, but they extended their favoured commands to New York, where, under their influence, the price advanced nearly $2 per ton early in January last. Pending the result of the "doings" there, the advance here checked the very demand which the speculators had made themselves too sure of, and the market showed rather more than shadowy symptoms of a fall, which it was necessary by some means to prevent till the next steamer should bring tidings of the corresponding advance in America, when, as they thought, the effect here must be an immediate activity of demand from exporters and home consumers, which would put the price up, and accomplish their anticipated profits. A bold attempt was, therefore, made by the leaders connected with this juggle, and the intention was well circulated, as were also orders to London, Manchester, and Liverpool, to purchase from holders there for *Glasgow account*, all the pig-iron which could be got; that they would cause the makers to deliver into store all the iron which the speculators could directly and indirectly control, thus preventing depreciation in value, by keeping the surplus stock in their own hands. This certainly had an effect on this market, because these leaders were active buyers the while, and the price advanced exactly in proportion to the extent of their own demand, reaching last week 51s. per ton for assorted qualities. Deliveries went on, the game seemed successful, the players looked on, the market remained steady. Cautiously were the preparations to sell, going on in conclave. They felt certain the American mail would put them all right. The result is striking, and gives another instance of the folly of speculation, either by individual or associated efforts, in an article above its true value, and particularly so when the power of production, as in pig-iron, is so much out of proportion to the real consumption, apart altogether from the excessive stock which is in existence.

The American mail *has* arrived, and within six hours of the receipt of the letters, which are dated 23d January, at Glasgow, the market is glutted with sellers, the price recedes to 48s. 6d. to 49s., and no buyers can be induced to make an investment. Is it asked, what is the nature of the advices which produced this result?—the explanation is simple, and will be easily understood from the following condensed statement of them:—"There has been spirited speculation here in Scotch pig-iron, but the market has now become languid, and buyers decline even No. 1 Gartsherrie at $21½. Some of the Glasgow yearly circulars have been inserted in the New York papers, showing the large out-put and stock there. This appears to have checked the animus for operations. The stock at furnaces, &c., and the excessive supply, together with an entire suspension of consumers' demand till 1st April, leave no cause for higher prices *here* for several months—indeed, it is difficult to see how buyers, at $21½, cash, to place in yard for three months, at an expense of $1¼ to $1½ per ton, are to make profit, or even realise cost and charges." Another firm, of the highest standing in New York, writes—"The stock of Scotch pig-iron in *first* hands, in this market, on 1st inst., was 42,000 tons; the receipts subsequently have been considerable. There has been more activity since the departure of previous steamer, and 3000 to 4000 tons were taken on speculation, principally for English and Scotch account. The demand has abated, and the price is declining. Bar-iron is in good request, and Scotch is asked for at an advance on the price of Welsh, which is quoted at $43 per ton."

The trade will watch, with no inconsiderable degree of interest, the course our speculators and the market will now take. Of one fact, however, they have no doubt—viz.: that, if the price advances again this side of August, it will not be on account of scarcity of iron. With a present stock of 215,000 or 220,000 tons, and a ratio of annual production of about 650,000 tons, there is not much danger of being dependent on foreign supply by 31st Dec. next; but, as a Manchester contributor of the *Mining Journal* promises to present its readers with a new feature in the stocks at last December, it may be prudent not to be very positive on this head, simply adding that the view given above is currently received by the trade here and elsewhere.

THE IRON TRADE.—We have been requested by Messrs. Zulueta and Co., of Moorgate-street, to inform all parties connected with the iron trade, that the advertisement, which appeared in our columns on Saturday last—stating that 3000 tons of rails were required for a foreign contract, and in which reference was made to their house—was not sanctioned by them, nor have they any knowledge of any such quantity of rails being required. It is their opinion that it has been done for the sinister purpose of getting up the price of rails in this country.

REVIEW OF THE COAL TRADE OF FRANCE, 1849.—In our last Number, we gave a summary of the official returns of the iron manufacture in France, and now proceed to give those of coal. The quantity raised during the year was 41,693,420 quintals (2 cwts.), being an increase over 1845 of 2,672,501 quintals, and more than double that of 1834. The price varies according to the district from 1 fr. to 4 fr. per quintal; but at an average of 2 fr. per quintal, the total would reach about 3,700,000*l.* sterling for the year. This comprises all the varieties of coal, to which must be added 5,106,017 quintals of peat, employed in manufactories, distilleries, kilns, &c. The quantity of coal imported was—from Belgium, 18,502,066 quintals; England, 6,113,010; and Bavaria, Prussia, &c., 2,324,144; together imported, 21,939,220, making the total consumption of coal 66,632,640 quintals. Considerable saving has been effected in the consumption of coal on railways, and in steam navigation, by the introduction of the various improvements in the machinery from England; in some instances the saving has been as much as from 15 to 30 per cent.

EXPORTATIONS OF IRON, COPPER, COALS, &C., TO THE UNITED STATES.—By the last advices from New York, the passing of the repeal of the Navigation Laws in England has given a very great impetus to trade, and it is expected that during the present year the importations of iron, copper, coals, &c., from Great Britain will far exceed those of any previous year, as several very extensive orders have already been transmitted to this side the Atlantic, for our mineral and metallurgic produce, as well as manufactured goods. In 1849 the importations of rolled bar-iron was 173,457 tons; other bar-iron, 10,598 tons; pig-iron, 105,632 tons; hoop and sheet-iron, 25,028,782 lbs.; steel, 6690 tons; manufactures of iron, steel cutlery, &c., to the value of $5,297,116—total, $15,051,961. Other metals and miscellaneous: copper and manufactures of copper and brass, lead and tin ditto, $4,387,542; coal, 198,213 tons, valued at $409,282; and salt, 11,622,163 bushels, valued at $1,438,981. Several large steamers will be launched early this spring, intended to ply between the different ports of the United States and Liverpool.

CONTRACT FOR COALS.—The Commissioners of the Navy will contract, on the 19th inst., for the delivery, at Singapore, of 2500 tons of Welsh coals, fit for the service of her Majesty's steam-vessels. Tenders to be sent to the secretary of the Admiralty, Somerset-place, and persons thus tendering to become bound in the sum of 1000*l.*, for the due performance of the contract.

QUALITIES AND MIXTURES OF IRON.

In the *Mining Journal* of January 26th we gave a short synopsis of the general opinions of those gentlemen, of great practical experience on the subject, who were examined before the Strength of Iron Commission, as to the power and general qualities of iron, and now proceed to detail more particularly the evidence and experiments of Mr. MORRIES STIRLING which appears to us to be worthy the fullest consideration of every person connected with the manufacture of iron. The patent toughened pig-iron is now become an established article of commerce, and very generally resorted to where strength and toughness are desirable, in large castings. In his evidence before the commission, Mr. Stirling described cast-iron (as generally made in this country), as being extremely complex in its nature; it consists of iron, carbon, silica, and occasionally some of the phosphates and other mixtures, which may be denominated impurities. The cast-iron made in Sweden, and in those countries where magnetic ores are used, is much purer, and is said to contain less carbon; the strongest cast-iron Mr. Stirling considered to be that which contained, probably, 2 per cent. of carbon, assuming the maximum proportion to be 5, and the minimum 1 per cent. A mixture of hot-blast No. 1 with strong cold-blast No. 3 would give nearly that proportion; and, if it could be produced at once from the blast-furnace in that proportion, it would probably be a better iron than is usually produced. Fluidity appeared to depend on other properties in iron which were not so well ascertained as those which conduce to strength; and it is said that a very small proportion of arsenic increases very much the fluidity; and the Berlin iron owes that property to such mixture.

In reply to a query, as to the chemical differences between hot and cold-blast iron, Scotch, Staffordshire, Welsh, and Swedish iron, Mr. Stirling said, the question was a difficult one; Scotch iron, generally, he considered the most carbonaceous, and Welsh the least so; all his experiments tended to confirm this view, and that the Staffordshire iron was intermediate. Mr. Stirling described his plan of strengthening cast-iron by an admixture of wrought-iron. The proportions he recommended were, for Scotch No. 1 hot-blast, from 24 to 40 lbs. per cwt., according to the richness of the iron; No. 2 requires a smaller portion, say, from 20 to 30 lbs., also according to quality; No. 3 *generally* he did not recommend for mixture, as uncertain; but No. 3 Scotch hot-blast makes an excellent mixture, with from 15 to 20 per cent. of malleable iron, for large castings. Staffordshire No. 1 will not bear so much as the Scotch; and in the same proportion with Nos. 2 and 3; 20 to 30 lbs. would be a higher proportion for Welsh No. 1. The increased cost of Mr. Stirling's patent toughened iron, including his royalty of 5s.* per ton, was from 10s. to 15s. per ton; but the iron thus made is stronger by 60 per cent., and more than compensates for such increase. The plan did improve the best irons, but the effect was much greater on the worst, and seems to bring irons up to an average quality.

Mr. Stirling read extracts from some letters, on the superiority of iron so manufactured, one of which was from Mr. Barry, the architect to the Houses of Parliament. It stated the result of experiments to ascertain the relative strength of ordinary cast-iron beams, in comparison with some made of Stirling's patent iron; the ordinary ones were a compound of one-third of hot-blast Scotch iron, one-third Blaenavon iron, and the remainder old iron; those formed on Mr. Stirling's patent consisted of 23 lbs. of wrought-iron to 89 lbs. of Kinneal iron; the beams were 12 ft. 4 in. long, 8⅛ in. deep, 1¼ in. broad in the centre; the bottom flange 3¾ in. and the top 2¾ in.; the bearing distance was 11 feet. The breaking weight of the ordinary beam was 15·93 tons, with a deflection of $\frac{13}{16}$ths of an inch, and that of the patent, 22·5, with a deflection of 1 inch. A weight of 14·06 tons produced a permanent deflection of ¼ of an inch in the ordinary beam, while 16·87 tons only produced, in the patent one, a deflection of $\frac{1}{16}$ in. On the subject of wrought-iron, Mr. Stirling said, that the processes of puddling and refining are still not well understood; and, as competition has compelled many ironmasters to regard quantity rather than quality, wrought-iron generally has not improved in this country, but rather the reverse. He had applied the same process to wrought-iron as to cast with very beneficial results; he could take the most inferior iron in Wales, and by the addition of wrought-iron scrap to the pig mould, render it fit for converting, without previously refining; whereas, without such mixture, it must be previously refined. On this subject, Mr. Stirling read a letter from Mr. Morgan, a blast-furnace manager, in which he stated that the introduction of scrap into their pig-iron, for converting, was attended with beneficial results. Repeated trials were made with 5, 10, and 20 per cent. of scrap; and, when the pig-iron alone was quite unfit for converting into bar, without passing through the refinery, the introduction of scrap, in the proportions stated, caused it to show a gradual improvement, the last mixture making a bar fully equal to their best re-fused metal. The same results are obtained when manufactured into tin-plate.

Mr. Walker, of the Gospel Oak Iron-Works, wrote as follows:—"The toughened iron being supplied at the same price as pigs of best mixtures, I do not see any reason for making a difference in the price of castings. The toughened iron being ready mixed, of good soft hot-blast, and a fan-blast to the cupola will, I think, ensure good sound castings, and no more than the usual waste in melting." Mr. Stirling further stated, that there was perfect certainty in the mixing wrought with pig-iron, and that very little experience is requisite to ensure the proper treatment of the iron, and the consequently certain results as respects the strength of castings, where parties had some experience, a very little being sufficient always to produce the same results. He suggested to the commission that, if further experiments were to be tried, a series should be made upon the iron from different districts, taking the geological structure of the country from whence the ores are derived, the difference in the ore, the natures of the fuel, fluxes, &c. Mr. Stirling, in the course of his examination, produced various details of tabular matter, showing the comparative results of experiments on various compositions of different irons, among which are the following, sufficiently convincing of the value of the process:—

The mean breaking weights of Nos. 1, 2, and 3 Dundyvan iron, and of Mr. Morries Stirling's patent iron, cast in bars 1 inch square, reduced, at 4 ft. 6 in. bearing, gave an average for Nos. 1, 2, and 3, common iron, of..... *Lbs.*	446½
And for Nos. 1, 2, 3, of the same iron, toughened, with different proportions of wrought-iron scrap, of	734

These averages are taken from 18 bars of each kind, equal to 42 bars of the toughened iron, with various proportions of wrought-iron scrap, give an average of 720 lbs.

Mr. Morries Stirling makes the breaking weight of bars of 2 in. square (*reduced*), at 9 feet bearing, to be—

Of No 1, Calder (Scotch hot-blast)	*Lbs.*	1002
No. 2, Blaenavon (Welsh cold-blast)		1469
Toughened Dundyvan, No. 1 (Scotch hot-blast)		2152
" " No. 2 "		2338
" " No. 3 "		2480
" " proportion of malleable scrap	with a different	2601

Mr. Eaton Hodgkinson, in same report, at p.p. 79, 80, 81, and 82, gives the breaking weight of bars of same dimensions as follows:—

No. 2, Blaenavon..... *Lbs.*	1220
No. 1, Lowmoor	1207
Bars made at Warrington, composed of 8 parts Madely Wood, 6 parts Lilleshal, 3½ parts Pontypool, 5 parts charcoal pig-iron	1375
Mr. Morries Stirling's mixture (second quality), composed of No. 1 Calder hot-blast, and about 20 per cent. malleable iron scrap	2174

The experiments tabulated as having been tried at Mr. Grissell's, give even higher results than most of the others, on Mr. Stirling's iron.

Mr. Stirling further stated that, in the course of many experiments on a large scale, at the works of Mr. Wilson, of Dundyvan, he had found iron very susceptible of change and improvement in the puddling-furnace; by melting mixtures of wrought and cast-iron, and then puddling them, very great improvement in strength and quality is the result. By using a soft cast-iron as the basis of these mixtures, a more ductile wrought-iron is produced, stretching more when tensilely strained, but not bearing so great a strain as malleable iron made from a mixture where harder pig-iron is used. The addition of zinc in various forms (he preferred calamine) renders the malleable iron more fibrous, cleaner, and better; and the addition of tin and some other metals hardens the mixture, and renders it well adapted for the upper surfaces of rails, tires of wheels, and other such purposes.

* Royalty believed to be reduced to 2s. 6d. per ton; price, therefore, from 7s. 6d. to 2s. 6d. above that of common iron.

RAILWAYS AND GAS IN SPAIN.—The contract for the line from Madrid to Arunjnes has been agreed upon, and will be carried out immediately. Several other lines will also be commenced in the present year. This will cause a large demand for iron, which will be principally supplied from England under newly-arranged facilities, granted by the Government. An English gas company has been formed in Madrid, and several of the chief cities are about to adopt that system of illumination. To facilitate the carrying out the new tariff, warehouses are being constructed for stowing goods—a system long wanted.

Original Correspondence.

AMERICAN TARIFF—THE IRON TRADE.

SIR,—As it appears that, in the recent notices which have been taken of the American tariff, the real protection afforded to the American iron manufacturer by the present rate of duty is not generally understood, and as it may be interesting to your readers to know the exact amount of money which the British iron manufacturer has to disburse before he can offer his iron for sale at New York, or other ports in the United States, I will now take the liberty of laying before you the extent to which the present duty, and other charges, affects the Scotch ironmaster; and, first, with regard to pig-iron—

Taking the average price of Scotch pig-iron at the shipping port, at		£2	7 6
Add—Duty, 30 per cent.....	£0 14 3		
Freight, 20s. to 22s. 6d. (say).....	1 0 0		
Insurance	0 1 3		
Weighing	0 1 2		
Wharfage	0 1 4		
Commission.....	0 2 9		
Interest	0 1 0	—2	1 9
Makes the cost of Scotch pigs, landed at New York		£4	9 3

Or 88 per cent. against the British manufacturer.

Then, taking the price of Scoth bar-iron at the shipping port, at per ton ..		£5	10 0
Add—Duty, 30 per cent.....	£1 13 0		
Freight, 21s. to 23s. 6d. (say).....	1 1 0		
Insurance	0 2 9		
Wharfage	0 1 4		
Commiaston	0 6 0		
Weighing	0 1 4½		
Interest	0 2 3	—3	7 8
Makes the cost of Scotch bar-iron, landed in New York		£8	17 8

Or 61½ per cent. against the British manufacturer.

It thus appears that, even at the *present* rate of duty, the American manufacturer has a difference in his favour of no less than 88 per cent. on pig, and 61½ per cent. on bar-iron. He may say, no doubt, that, in order to meet the British manufacturer at the seaboard, he has to pay the expense of bringing his iron there; but, looking to the present great facilities in transit, this must come to a very small sum when compared with the charges paid by the British manufacturer. Besides, if the American maker has to pay these charges on iron brought down to the coast for shipment, he, on the other hand, has the advantage of supplying the trade of the district in which his works are situated, without the expense which the British manufacturer must incur in carrying his iron from the seaboard into the interior. It is generally understood in this country that the present movement for an increased duty is only pressed by a comparatively small number of interested parties; and it appears from recent letters that, on the other side of the water, the general opinion is that the Legislature will not adopt the one-sided policy of farther taxing the American nation and impeding the commercial intercourse between the two countries, in order to forward the views of certain classes.—JOHN BARCLAY: *Glasgow*, *Feb.* 5.

ON THE TREATMENT OF RICH SILVER ORES.

SIR,—I shall feel obliged by your allowing me a small space in your valuable columns, in reply to Mr. Daniell's communication of last week, as he appears to profess to be opening a new era to the mining public on the treatment of rich silver ores, in which I wish him success, as it may be applicable to many other ores. As to the management of Wheals Duchy and Brothers, I can inform him that these mines were conducted by Messrs Fox and Williams, who were at that period considered the best miners of the day. Mr. Michael Williams, brother of the late John Williams, Esq., of Scorier House, resided for a length of time on the mine to assay the ore, and conduct the general proceedings; notwithstanding which, I must admit great errors were committed; but not so much through ignorance as Mr. Daniell appears to imagine. Many of the old school were perfectly aware that all the refuse contained silver; but purchasers could not be found, unless the ore was dressed to a certain standard, until Lucas and Shore appeared among us.

Mr. Daniell being of the new school, and an adept in the art, it is to be hoped he will enlighten those of the old by a full description of his process for their better guidance; for it is quite evident that hitherto nearly every mine agent has submitted the greater portion of his ores to water, both before and after sublimation. But I am surprised to find your correspondent taking credit to himself for the very thing I endeavoured to point out clearly to him in my communication in the *Mining Journal* of 26th Jan., in which I distinctly stated that most lead ores pay better to be dressed to a standard of from 9 to 10 cwts. per ton, *without water*, than if dressed up to 12 cwts. by submitting them to water. He has also put a wrong construction (I hope not intentionally) on my observations about the "still hutch." I advised everyone to pick out one-half of "best dredge ore," if rich for silver, and sell it without submitting it to water, or jigging it, and thus prevent a loss. I do not dispute the possibility of specimens of arseniates of silver being reduced 40 per cent. by sublimation. There can be no doubt as to the respectability of Messrs. Michell and Sons; and I again repeat what I said in my former remarks on the subject, that the calcination of these ores is part of their process, and can be carried out much more economically in their establishment than on a mine, whether the manager be of the old school or the new; and, having seen many attempts to carry out works of this kind on mines, I should much like to be informed of one case which ever remunerated the adventurers. Adam Smith recommended the division of labour, in which I quite agree, and should recommend all reduction operations to be kept distinct from mines, rich silver ores to be sold in their crude state as soon as possible, and the money employed in the spirited prosecution of the mines, and thus avoid the necessity for repeated calls. Mr. Daniell is much in error when he thinks I fancy that "all silver in this country must be blended with lead;" but, when found without, is no proof of continuance in depth, however much like the lodes of Mexico. I will certainly call and have a view of the mine, and Mr. Daniell's mode of dressing, if he will allow me; and hope his mine will prove an exception to many others. N. ENNOR.

Treborough House, *Feb.* 5.

ON THE TREATMENT OF RICH SILVER ORES.

SIR,—I perfectly admit Mr. Ennor's argument, that the less silver ore is submitted to water concentration the better; the loss in such treatment is always very considerable. However, crushing and jigging with a "still hutch," frequently tapped into larger tanks, to allow time for deposition, is frequently adopted with advantage where the ore is scattered in the lode. With respect to Mr. Daniell's mode of concentrating by calcination, there are many points to be considered. First, he must arrange his draft and flues, to avoid the loss from sublimation, otherwise little benefit will be derived by this process; again, after incurring the expense of calcination, &c., very little more would be required to extract the silver out at once by double decomposition. I speak from experience, as I have treated some thousands of tons of silver ores without lead. I repeat, if the company go to the expense of making roasting furnaces, and the process of calcination, they need not send their ores to the smelter. I should like to see some of the specimens on my return to London.—E. HOPKINS: *Bangor*, *Feb.* 7.

NEW MODE OF PREVENTING ACCIDENTS IN COAL MINES.

SIR,—Recollecting the reception which the Davy lamp encountered, at the period of its first introduction, I cannot be surprised that my recently proposed method for the prevention of accidents in coal mines should have met with a certain degree of opposition. I am bound to say, however, that Mr. J. Richardson has treated the subject in a very fair and argumentative way, and, indeed, in the outset of his remarks, he rather tends to support me than otherwise, by quoting the evidence of Mr. Buddle, before the Parliamentary Committee of 1835.—(See *Mining Journal*, Jan. 26, 1850). I will not now attempt to dispute the several positions taken by your correspondent, or to insist upon the efficacy of my contrivance. Mr. Richardson appears to be a practical miner; I am not, nor have I ever assumed to be such. My own particular views upon the subject of the invention are already before the public, and the propriety of its adoption must now be a matter of consideration for those who are directly interested in the safe working of collieries. I will merely observe, in the case of its application to any mine *of great extent*, that the noise resulting from explosion was merely intended by me to operate as a warning to those above-ground, who could then have recourse to some further signalizing apparatus of a simple and appropriate character, so as to render the presence of danger generally known. These remarks will also apply to the letter immediately following that of Mr. Richardson. I am sorry, by-the-bye, that the author of this last should have thought fit to adopt an anonymous signature, and that signature so singularly inappropriate, for if your cor-

respondent is really "An Engineer of the next Generation," he has no business with the engineering of this.

I will now speak of a third epistle upon the same subject, and one which certainly requires comment, for the observations of the writer, M. Louis Jullion, are both unfair and unphilosophical—unfair, because he assumes credit to himself which does not belong to him; and unphilosophical, because he proposes the adoption of precautionary measures, which in themselves are fraught with extreme danger. The opening sentence of this letter is as follows:—"Sir: In your valuable Journal of the 19th inst. I observe, in a letter to the Editor, a proposal for a 'New Method of Ventilating Mines,' and the object of my present communication is simply to deny the novelty of such proposition, inasmuch as I have, for nearly 12 months past, advocated the use of galvanism for the ignition of explosive gases in mines." Now I take leave to inform M. Louis Jullion, that the plan proposed by me in your Journal of the 19th inst., is NOT for employing galvanism to ignite explosive gases in mines. It is quite a different thing, as the description plainly sets forth; and, therefore, his declared anticipation of my idea (be that idea good or bad, practical or worthless), is an unwarrantable assumption. Besides, the explosion of gases in coal mines by galvanism, is a question which I am sure I heard discussed at least 10 years ago; and I have little doubt, though I cannot speak positively upon the subject, that if your correspondent will look over the back volumes of the *Mechanics' Magazine*, he will find this very suggestion either casually referred to or fully detailed. But, even supposing that the plan now proposed by M. Louis Jullion were perfectly original, what is its value? How many coal mines does he, as a "professor of chemistry," intend to set on fire in the course of his practice?—ISHAM BAGGS: *Feb.* 8.

IGNITION OF FIRE-DAMP IN MINES.

SIR,—I am not aware of the precise state of the question, as it exists between Mr. Baggs and M. Jullion, respecting the ignition of fire-damp in mines, by means of voltaic electricity; but it is one I have, six or eight years ago, proposed. The proposition appeared first, *eight years* ago, in the *Gateshead Observer*, which plan was attacked by an *anonymous* correspondent (I believe, the late Mr. John Buddle); while, singular to say, there occurred an explosion in a coal mine, in Northumberland, shortly afterwards, which this very proposition, if adopted, would have prevented! I simply quote, in verification, the following, from p. 13 of my pamphlet, entitled *Communications on Coal Mines*, published six years ago:—"I propose, further, to ignite the gas by means of Smee's voltaic battery, the occasional immersion of the plates, when required, effecting an instantaneous ignition of platinum wire, by which the gas may at any time be kindled." The copper wire extended throughout the ramifications of the mine, and was interrupted at intervals by platinum wire.—"*Litera scripta manet.*"

Portland-place, Hull, Feb. 7. ——— J. MURRAY.

THE VENTILATION EVIDENCE.

SIR,—The general questions propounded in a promiscuous assembly of legislators upon the mere elements of mining, must, of necessity, as is the case with all vague generalities, contain so many practical errors, that it would not be fair to subject them or their answers to any severe criticism—indeed, the attempt would be as hopeless as grasping quicksilver; but when there is something more than surmise and opinion, and decided errors of fact are set forth as the result of such inquiries, it will not do to pass them by. Sir H. De la Beche is an eminent geologist, and as such must surely be acquainted with the fact, that the collieries in Gloucestershire do not evolve carburetted hydrogen gas. This fact is doubly important as a geological feature, and as intimately coupled with the views of the late Mr. Ryan on the best means of preventing explosion. It is very probable that Mr. Ryan was too ardent in his belief that his remedy was universally applicable; but it was based on a sound principle, the result of extensive and accurate observation—of which the Gloucestershire coal-field is a strong illustration; and where his principle is available, or can be made available, there seems no question of its efficacy. Was it too much to expect some allusion to this peculiarity in Sir De la Beche's evidence? But, on the contrary, what is found? In a vague enumeration of badly-ventilated collieries, which, in fact, condemns all the colliery districts of Great Britain, with the exception of the Newcastle, Gloucestshire is recorded with the commissioner's brand. Now, besides the bearing on ventilation and on geology which the features of that district present, there is a third circumstance which gives it a triple importance, and renders peculiarly faulty the meagre and incorrect evidence given respecting it. The coal-field of the Forest of Dean is the property of the Crown, from whom the collieries are held on indefinitely long leases. The whole district has been mapped out and planned by *Government* commissioners; and the mines are under the superintendence of a *Government* officer, resident on the spot. When there is a question afoot as to Government inspection, is it not strange no trace of these facts should find their way into the evidence? And if, as Sir H. De la Beche asserts, the collieries are ill-regulated, what is the plain inference? The Government officer is a most able practical man, educated in the Newcastle collieries, under the most eminent and well-known viewer that district has produced. Practical advice upon every difficulty is always at hand. There is a facility for surveying and registering accurate plans, on a uniform system, of all the workings, which at the *least* is not *exceeded* in any other district; and yet it is printed under a Government inquiry, that these collieries are "ill-regulated." It is very important not to pass this over. If a bill at some future period were brought in, filled with those absurdities which always have distinguished, and I believe always will, any attempts to legislate on the subject, and I, or any other proprietor, were to point out those errors, would not the answer be, these gentlemen are interested in maintaining a bad system; they are the advocates of abuse, pointed out page so and so of the Government inquiry? I, therefore, meet this error at once with the most marked notice. I do not blame the commissioner, but the system. Nothing of practical use can ever arise in these cursory inquiries; they are like books of travels, where the natives are equally surprised at what is omitted, and what is narrated; and a third person passing over the same ground can find no traces of the object of the story.

About two years since, when I was residing in the Forest of Dean, where I have collieries and iron-works, Mr. Tremenheere passed through on his round of visitation. I was only aware of his presence three days afte he had gone, a particular friend (a clergyman) mentioning to me he had called on him with the usual routine of questions. I afterwards read the results developed in a very well-written report, in which I certainly could recognise some facts; but to one acquainted with the locality, they wore the same aspect as the late remark by a German traveller—"That dishonesty is so scarce a vice in England, that when thieves are wanted, it is necessary to advertise for them." Yet I think Mr. Tremenheere's are the very best Government reports I have seen; but no man can do what is impossible. It is out of the question by these cursory visits to obtain an accurate knowledge either as to persons or things, much less to frame the shadow of a useful conjecture how they are to be modified. How can small things be investigated, when blast-furnaces are not large enough to attract the passing notice?

In a report lately printed in your Journal, giving the number and names of the iron-works in Great Britain, and of their proprietors (with variations), I found that seven furnaces, and my own among the number, had ceased to exist in an incredibly short space of time. I trust there may have been less haste and more accuracy in other districts. I gave rather at large in your pages in 1847 my opinion as to the practicability of a *beneficial* Government inspection of mines; I then compared its probable efficacy to a system for preventing accidents at sea, by placing captains under order of a naval inspector, and I see nothing since to alter that opinion. I have attentively watched the mass of absurdities which as usual found their way into your pages, after the melancholy occurrences of last year, like a cloud of after-damp; they were mixed with a few excellent letters from men evidently employed in doing well that which others talk of doing better; but what has appeared to give a practical man the least hope that anything desirable is any nearer its attainment? It is said, many men of sound views have altered their opinion as to evils of Government inspection. I do not credit it. Some may have yielded to clamour, and be willing to get rid of the odium which is fixed upon them, often most unjustly, by handing it over to those who are too eager to encounter it, but as yet I have seen no sound reason that can act on a sound mind. It is quite notorious that the loudest advocates for inspection are men who, from their deficiencies, or their superabundance in crotchets, cannot be entrusted in their respective districts with practical employment. The greatest reformers of other people's affairs have always been those who cannot take care of their own. I make no doubt Mr. Blackwell's report, as a practical collier, will contain interesting facts, very different to ordinary reports; but it is scarcely to be hoped it can succeed in solving the problem of Government inspection. I do not mean to say, that plenty of men cannot be found to undertake the duties, and receive the salaries of that "police of mines," which seems *now* to be contemplated, but *all powerful* as legislation is, will it be able to create a body of men who understand mining better than those who already earn their bread and their reputation by accomplishing its duties. If it can, they will be hailed by proprietors, and *paid as managers* the full salary of *inspectors*.

I believe, as I have before stated, that something might be done by establishing a *more stringent* system of inquests upon these kind of accidents, leaving its legitimate influence on those who are most concerned in the matter, and who have the *best opportunity* of doing so, to find out the best means of avoiding the *certain penalty of proved* neglect. I am glad to see you have now set your face against those who have been bringing in the base trade of "agitation" to perplex this important and difficult subject. Cannot these mercenary characters find their benevolent energies a less mischievous occupation—for instance, an inquiry and enactment to prevent the upsetting of boats by sudden squalls at sea? These are a species of "blowers," and have been the occasion of the most melancholy disasters.—*Feb.* 4. ——— DAVID MUSHET.

MANUFACTURE OF IRON—MR. LEIGHTON.

SIR,—I regret I have not been before able to reply to Mr. Leighton's last letter, for it is time to surrender a contest in which I am so bad an advocate, that my arguments only confirm him in his errors, instead of convincing him out of them. Practical men, I know, must smile at the pains I have taken to refute a self-evident error, for what is more certain than that *adulteration* can be no *improvement*. I little expected, when I wrote a few short remarks, that they would have been contested, and I have unexpectedly been led on at such great length by the natural dislike to leave unfinished what is once begun. I cannot see any difficulty in understanding why I should reiterate Mr. Leighton's admission respecting cable bolts, after being charged with misconstruing it. If cable bolts (or any other form of iron), which requires afterwards to be forged and welded, do not need the supposed admixture of cinder, but is absolutely injured by it, how entire gratuitously is the theory that any species of iron requires it. As to the illustration of hardened leather, I know no iron whatever to which that illustration will apply. Fire is sufficient to soften all iron, so that it can be worked according to its quality. If it is of a very inferior manufacture, such as that instanced by "A Staffordshire Ironmaster," does Mr. Leighton think it would be improved by filling up the cracks and rents with cinder? I have at least brought Mr. Leighton to define his views in a narrow compass—viz.: "that the great and only advantage of the cinder is to save the smith trouble," but he admits at *the expense of the quality of the iron*. Does he think this a legitimate object in ironmaking? Iron stratified with a much more fusible substance will, undoubtedly, be softer under the hammer, and the smith's wrists may find a comfort in it; but will any one agree to buy cinder and iron by weight in preference to iron? It is likewise an undoubted fact, that puddled balls, enveloping a quantity of liquid cinder, will pass more glibly through the rolls. The cinder acts as an unctuous lubricant, gratifying the "*feel*" of the roller-man. But I ask again, is this a legitimate and desirable object? Mr. Leighton must be aware there are a hundred other ways in which the workmen may consult their comfort at the cost of their employers; to thwart this comfort-loving principle is the very business of a manager. Probably the many thousand tons of "rotten short" rails, described by Mr. Thorneycroft, were manufactured thus—with more attention to the roller-man's "feel" than to the shareholders feelings. Is this a fair way of increasing yield from the puddling furnace? It is equally true that iron rolled in this slovenly way will "show the fibres more clear and distinct." Mr. Carter correctly remarks, "the more common the iron, the coarser the fibre," all which depends on the absence of the principle I have endeavoured to elucidate—a dense approximation of the particles. Mr. Leighton appears to have two distinct and opposite notions at the same time in his mind. Nothing can be more diametrically removed from his plan of "forging made easy," by the adulteration of cinder, than his other plan of producing iron with "one solid fibre." Before his iron even approaches this consistency, it will have very far surpassed even the density of cast-steel, and be of a hardness far exceeding what smiths ever yet forged at any expense of trouble. Which, then, is his real object—"forging made easy," or difficult? It is true a bolt of toughened copper will not *split up the middle* like a bar of *badly-manufactured iron*; but it will show the fibre appropriate to itself. How is Mr. Leighton's explanation of fibre to be applied to *cold-drawn wire*?

On the action of the puddling-furnace, let Mr. Leighton carefully study Mr. Mitchell's account of the chemical changes which occur, and not *hastily*, for on this subject haste will not succeed, either in writing or in practice. The operation lies betwixt two extremes—viz.: to liberate the carbon as rapidly as can be attained, without a wasteful oxidation of the the iron, and the latter must be the inevitable consequence of "blowing air" over the iron. It will urge the process as destructively as filling the bridge with coke would retard it. The use of red ore with ground coke is anything but "tantamount" to the latter; it is as opposite a thing as can be. Does not Mr. Leighton know that the use of red ore, or other pure oxide of iron, in the puddling furnace, *without carbon*, greatly assists the malleablisation of the iron, and increases yield? This effect is calculated on the true principle, directly opposed to his own. To mix ground coke with the red ore, is like extinguishing fire by pouring oil with one hand and water with the other. However, I wish Mr. Leighton success in his object, whatever it be. Authors, inventors, and fond parents, are always the last to perceive the defects of their offspring; and, therefore, for the present, I cannot expect Mr. Leighton to appreciate my arguments to its disadvantage. I hope he may healthily rear it; but to make sure of this, he must feed it with the food of accurate data. He must not listen to the recommendation of a correspondent (who, by the way, is sorely puzzled that the barking of Cerberus should be styled "infernal"), given as the fruits of "a long course of practical experience," that ironmaking must be treated with "inaccuracy." Long practice in inaccuracy may warp the mind, until it believes that accuracy is impossible; but Mr. Leighton may be assured that, in the manufacture of iron, it is not only *possible*, but *necessary*. As a first step, he must annihilate his carbo-oxide; if not, he may as well urge in the face of fact and authority any other notion—as, for instance, that pure water is a triple compound of hydrogen and oxygen with azote, or sodium, or prussic acid.—D. MUSHET: *Feb.* 5.

GASES FROM THE BLAST-FURNACE.

SIR,—The paragraph relating to the Pentyrch Works, which appeared in your last Journal, as copied from the *Merthyr Guardian*, is incorrect. The process of using the gases from the blast-furnace under the boilers of the blast-engine, in lieu of fuel, does not come under the patent of Dixon and Budd—its use being known in this country long prior to the patent of those gentlemen. It was first introduced in Derbyshire—I believe at the Staunton Iron-Works—where it is still successfully used. Some 12 months since, Sir F. C. Knowles introduced it at his works in Glamorganshire. I saw it in use last summer at the Pembrokeshire Iron-Works, near Tenby; and the same process is in use at Sir J. Guest's large iron-works, and at Pontypool Works also. Perhaps some of your able and talented correspondents (Mr. Mushet, Mr. Mitchell, and others), would be pleased to give the public further and fuller information as to what is now doing with this gas, and its effects in economising the price or first cost of pig-iron. I hear that its use has been long known on the continent. So important a matter deserves attention in your columns. F. C. W.

Feb. 8.

THE ANEROID AND MERCURIAL BAROMETERS.

SIR,—Though deeply impressed with the value of inventions in the arts, I yet endeavour to remember that

> "There is much that is new that is not true,
> While there is much that is true that is not new."

But I believe M. Vidi's ingenious and portable aneroid to be a decided improvement on any preceding instrument of the kind; I may question, however, if it surpass in accuracy the present mercurial barometer, with its thermometer attached, and the other precautions deemed requisite, ere a correct observation can be taken with that instrument. But Mr. Negretti thinks there is no need for correction of temperature in the mercurial barometer; and, having committed this serious mistake, he has laid himself open to a challenge, which, by the tenor of his last letter, he does not seem disposed to accept. Here he displays more caution than he has evinced in his former letters; for, as I said before, he would find the very best mercurial barometer, under the circumstances in which he tried the aneroid, to be quite as inaccurate as the latter instrument. Indeed, I am inclined to whisper to him, that he will find the mercurial barometer under those conditions to be more inaccurate than the aneroid, and, therefore, would counsel him carefully to shun the bet till he has learnt the value of a thermometer dipping into the cistern of the mercurial barometer.

But, as regards the weight and size of the two kinds of instruments, Mr. Negretti must now remember that Dr. Murray compared the aneroid with the mercurial barometer *in reference to the sea-coast*. Now, a mercurial barometer, to give satisfaction—that is, an instrument whose indications would be worth recording—should have the bore of the glass tube not less than half-an-inch; the quantity of mercury in such tube and its cistern, at a pressure of 30 inches, will alone weigh 8 lbs.; to which has to be added the weight of the glass tube, iron cistern, brass scale, thermometer, and mahogany case, with other appendages. Such an instrument, with its tube merely, will measure in height 33 to 34 in.—thus proving that I am very near, if not within the mark, when I said that the aneroid was $\frac{1}{4}$th of the weight and size of the mercurial barometer.—W. BIRKMYRE: *Feb.* 6.

MR. SHEPHERD'S RAILWAY REGENERATION.

SIR,—Your ingenious correspondent, in resuming this subject, in your last Journal, has chosen to change the title of his "plan," from "Railway Regeneration" to "Railway Management—Practical Reform," having, doubtless, in common with many of your readers, begun to suspect the adequacy of such small means to effect so great a purpose. Under whatever title the plan is advocated, and however inefficient it may be considered, there can be no doubt but that its able author is in earnest, and that his motives are praiseworthy, and, therefore, deserves respectful consideration. The introduction of changes into the system of working and managing railways is always attended with great inconvenience and considerable risk; the expediency, therefore, of adopting what are called "practical reforms" ought to be demonstrated as clearly as possible, and based on better data than inapt comparisons and vague suppositions.

Mr. Shepherd says, that "the facts recorded in his communication, respecting the amount of work performed by steam-power in private establishments, compared with railway locomotive engines, has not been disputed;" and he is right in saying so, because such a comparison is so obviously untenable as scarcely to require a refutation. Colliery and other engines in private establishments have always a full, or at least a fixed, amount of duty to perform; but the load of a locomotive is ever varying, and always uncertain; yet its power and efficiency must be maintained at a maximum, although it really works at only a minimum. Could Mr. Shepherd devise some plan by which the passenger trains would be always filled, and the locomotives never obliged to start with anything less than a full load of merchandise, his comparison would then be more feasible, and he would deserve, as doubtless he would receive, some substantial evidence of the lively gratitude of the "poor shareholders."

Mr. Shepherd cites the wages paid to the engine-men in the mining districts, and contrasts the amount received by the locomotive engine-driver to the miserable pittance received by the former, in order to show the extravagance of railway management. He says, the wages of the engine-men are from 12s. 6d. to 16s. per week, whilst the locomotive-driver receives from 7s. to 8s. per day. Surely, Mr. Shepherd does not mean to say that these engine-men are as capable of driving a locomotive as of working a pumping engine! If he does, he must be lamentably deficient in the knowledge, not only of the characters of the men, but also of the qualifications required in an engine-driver. It is true that the lives of the pitmen are entrusted to the keeping of the engine-men, and, in some instances to boys, who receive from 5s. to 7s. per week; and the consequence of this economy is painfully evidenced in your weekly statements of those killed and wounded in the shafts of our mines. If Mr. Shepherd's "railway regeneration," or "practical reform," is to be accomplished by following the example of the mine proprietors in this respect, he must indeed be a sanguine reformer, and a bold man, that can contemplate the results without a shudder. The price of a man's services, like other things, has its true market value; and where the supply does not exceed the demand, you cannot obtain a first-rate article at the same price as you may get an inferior one; if, from motives of misplaced economy, you substitute the low for the high-priced one, you will speedily find out your mistake, and revert to a better and sounder policy.

Unfortunate and inconclusive as Mr. Shepherd is in his comparisons, he is as little satisfactory in his figures. His selection of the South Devon as a pattern railway of the existing mode of management is somewhat extraordinary, as it certainly presents anything but an average sample of that skill and wisdom which ought, and in many cases does, characterise the conduct of railway directories. If the engines on that line only make one trip of 53 miles in a day—though it may confirm the sage's observation, that "the farther he went to the west, the more persuaded he was that the wise men came from the east"—yet it by no means indicates the management on railways generally, and, therefore, Mr. Shepherd's strictures ought to be confined to the South Devon, which certainly seems to require some kind of "regeneration" or other. Why Mr. Shepherd should have recourse to presumed data, when he might so easily have obtained *facts*, is for him to explain, but he must not be surprised if the estimates he gives are received with scepticism, when he "*supposes*" an engine to run so many miles, and "adds 1½d. a mile for repairs." "They *may* oil the engine, which, perhaps, runs from 50 to 60 miles per day," and so on. It would have been more satisfactory had he stated the actual cost of running an engine 100 or 200 miles, and then have shown how he proposed to diminish the present expenses. He says he does not mean to reduce the men's wages, but to double the earnings of the guards; whilst he would give the drivers 20s. per day, out of which they would have to pay the stoker and cleaner, which would leave the driver 12s. or 13s. per day; and yet he complains of their receiving 8s. per day, and instances the wages of the engine-men to show the extravagance of railway management! From whence, then, are we to derive the saving; the "regeneration of railways?" Is it from the diminished consumption of coke, oil, and tallow? Or does Mr. Shepherd rely on the engines running 100 or 200 miles a day? If so, his plan loses its originality, for it is no unusual thing for engines to perform this work on many lines in the kingdom.

Much more might be said in reply to Mr. Shepherd's communications, but your readers will probably be grateful if your space be spared for more interesting matters; I shall, therefore, content myself by reiterating the opinion I before expressed, that this plan of "railway regeneration," would prove a failure if it were adopted, and that the more it is examined, the more defective it may be shown to be. It is all well enough for Austrians to talk about English extravagance, but surely Mr. Shepherd would not hold up the management of continental railways as an example to us! Having travelled upon many of them, as well as upon most of the English railways, I hope we shall be long spared the infliction of such a system as prevails on the other side of the Channel.—A SHAREHOLDER: *Feb.* 6.

PATENT TRACKS FOR TURNPIKE-ROADS.

RESPECTED FRIEND,—I quite agree with your candid correspondent, J. Richardson, when he says "that it would have been more satisfactory had some practical proofs been adduced in confirmation of the opinion given in its favour." It is this I am anxious to get done; but hitherto I have been unable to induce individuals or the public to make the needful trial; it must, therefore, rest as matter of opinion until that event arrives. As to the bungling and inefficient plans of timber tracks and rails formerly made being superseded by iron trams and rails, that circumstance does not in my opinion militate against the plan I propose for turnpike-roads. Iron rails, or tramways, are not suited for that purpose; and, therefore, I propose a track of stone or *timber* to be laid *flush with the surface of the road*, so as to afford the means of the fast traffic turning off and passing the slow traffic. All timber tracks that I have seen have been constructed with timber laid in the direction of the fibre, which is objectionable. The plan I propose is to either cover a stout plank (say) 2 in. thick and 18 in. wide, with blocks (secured by means of hard wood pins) made of beech, elm, or other suitable wood, 4 to 5 in. deep, with the *grain or fibre vertical*, or by making a trough of 2 in. plank 18 in. wide at top, and 9 in. deep in the middle; then to fill up the inside part flush with the top, or rather above, with angular blocks, grain or fibre, *vertical*, secured to the planking in like manner. I propose the angular or parallelogram tracks to be inserted in the middle of the road by making two trenches, at a suitable distance to accommodate the wheels, (say) 2 ft. wide and 1 ft. deep, in which to put the needful quantity of gravel, or finely broken stone and concrete, so as to form a solid bed for the tracks; this I think my friend, Richardson, will admit is different to all former plans. Assuming that on such a track the friction would not exceed that of a granite track, and I think it would be less, let us see what is the advantage gained by such means over that of a good macadamised road, by referring to the results of experiments by James Walker, Esq., late president of the Society of Civil Engineers, on the granite track in the Commercial-road—an incline of 1 in 116. The general average of resistance of 4 tons was 127 lbs.; deducting the gravity (77 lbs.) left 50 lbs. as the friction, or about 12½ lbs. to the ton. Now, on an ordinary turnpike-road, the friction is from 65

to 80 lbs. per ton on a level. On the above-mentioned track, a pony, 12½ hands high, weight 4½ cwts., drew up 6 tons, exerting a power equal to 191 lbs.; a powerful horse, weight 14 cwts., drew up 12 tons at four miles per hour, exerting a power equal to 382 lbs., which is equal to six horses on a common road. It, therefore, appears obvious to my humble conception that there must of necessity be a great advantage in the adoption of *firm, substantial tracks*, which has been *practically proved will enable one horse to do as much as five or six can do on ordinary turnpike-roads*, which I think may be reasonably concluded is a strong presumptive proof in favour of the plan. I confess I do not stand much in awe of the past experiments and practice of timber tracks and rails, and can easily believe that the rejection of such inefficiently made tracks was even judicious; but I consider that the plan I now submit has little or no bearing on the success or non-success of the former plans, alluded to as having been practised in "the last century" in the north; and, therefore, I do not consider it as a "revival of an absolete system."

J. Richardson seems to imagine it as an almost impossible thing to travel at the rate of 12 *miles an hour on a timber track*; for he accompanies his remark thereon with a *note of admiration*, which reminds me of the sneers and notes of admiration against railways 25 years ago; but does he imagine that it would be impossible to drive at that rate on the stone track in the Commercial-road, or on the timber paving of Oxford or Regent-street with horses, or double that speed by the power of steam? I must confess I was rather surprised at the note of admiration from your intelligent and experienced correspondent, who seems to me to be somewhat disposed to conclude, that because success has not attended former practice, therefore it is useless to make further attempts, seeming to forget that circumstances oftentimes materially alter cases. I conceive it rather premature to inquire, *if there are any unequivocal data deduced from practical experience*, when it is considered that a track of the kind, or plan, proposed, *has never yet been made*; but, as soon as that is done, your correspondent and the public shall have a faithful account of the results. I hope what I have here stated may be the means of inducing J. Richardson to think more favourably of the plan than he has hitherto done; *but whatever may be his, or other's opinion thereon, until I am convinced by experience to the contrary*, I shall still adhere to the motto—"*Nil desperandum Teritate duce et auspice Deo.*"

Permit me, however, further to observe, that the object of the plan of fixing the blocks upon a plank, or in a trough, is to prevent the possibility of one block slipping below another, and thereby prevent the surface sinking into *holes or hollows*, which has been a *principal cause of the failure of timber street-paving*; and I feel confident that, if well-prepared Paynised beech, elm, Baltic, or Canadian timber, about 2 in. thick, was laid under stone, it would be a great preventive against the holes and hollows, so common to the present system of street-paving.

To conclude, I am inclined to think, that the trustees of turnpike-roads on which there is a considerable traffic, would find it to their interest and advantage to be at the expense of such tracks, because it would greatly reduce the present *annual expense of road repair*; and although the costs would incur an annual interest on the amount of about 50*l.* per mile, yet it is reasonable to presume that the public would not object to give double the amount of toll, seeing they would save *so large an amount of power, besides saving in the item of wear and tear*, and the great ease and comfort it would afford to passenger traffic. At all events, supposing a company or party disposed to be at the expense, it would be but reasonable in the trustees of the road to let such a company or parties carriages run thereon *toll free*, which I hope will *some day be the case*, and thus remove all existing doubts against the practicability and advantages of what I term *a new, improved, and rational system*—a system which, in my opinion, would enable the conveyance of passengers, *with horse-power*, at ½d. to 1d. per mile, and yet realise not *an insignificant* 2½, 2½, or 3 *per cent.*, or downwards to nothing, but something like 30 *to* 50 *per cent.*, and by steam an equal profit at ½d. to ½d. per mile. This I repeat as my opinion, whatever the *eminent and talented* may say or think to the contrary, and I have no doubt *time will amply prove it*, but which to my mind has been satisfactorily confirmed by the Commercial-road granite track experiment to which I have alluded.

Stangate, Lambeth, Jan. 22. THOMAS MOTLEY.

P.S.—I may just further observe, that I have lately consulted with several practical engineers and scientific individuals on the subject of my plan of timber tracks, among whom I will mention Gen. Sir C. Pasley, the Government Inspector of Railways; all admit that if the road is provided with a substantial track, the success of steam on common roads will be no longer problematical; and as the difference in favour of iron is not greater than as three to four, or about 25 per cent., what chance has a railway, that has cost from 3000 to 6000 per cent., more than a track-provided road, to convey passengers or goods, except such as to whom, or to which, time is of greater value than money; for if a person can be conveyed 120 miles for from 3s. to 6s. in 10 hours, I cannot think many persons would prefer giving three to four times more to go in half the time.

VIADUCT OVER THE RIVER TAFF, SOUTH WALES.

A paper descriptive of the viaduct, near Quaker's-yard, on the Taff Vale Railway, was read by Mr. S. Downing, C.E., of Trinity College, at the last meeting of the Institution of Civil Engineers of Ireland. The viaduct was designed by Mr. Brunel, to carry the main line of the railway over the River Taff, at which point were, from the nature of the locality, such crossing was unavoidable. The total length was 470 feet, and the greatest height 105 feet, consisting of seven semi-circular arches, each 50 feet in span, resting on pillars, whose horizontal section was a regular octagon, 5 feet 9½ inches in the side, giving 14 feet as the diameter. The whole structure was upon a curve of 1320 feet radius, and the point where it was determined to build, the axis of the river made an angle of 45°, with the direction of the tangent to the curve. One of the chief features of the design was the avoidance of the difficulties and expense of an oblique bridge with spiral courses in addition to those of curving—this was effected by the adoption of that form of pier above-mentioned. These pillars were surmounted by a capital of 7 feet in height, the base of which, resting on the pier, was, of course, identical in plan with it, but in this height of 7 feet was [illegible] out on four of its faces to the extent of 1 feet 8 inches, changing the regular octagon into another, whose sides were 9 feet, and 8 feet 7½ inches alternately. Two of the 9 feet sides were paralleled to the direction of the line of rails, and the other two formed the impost or springing of the arch. The best way to have an idea of the form of the soffit of the arches, is by conceiving an ordinary semi-circular arch of 50 feet span and 14 length, to have each arch quoins bevilled off to an extent of 2 feet 6 inches; and to turn this on a corresponding centre had to be made, being the ordinary laggings for the cylindrical part, and what were called by the workmen saddles for the radial faces. It will be evident to the practical engineer, that the proper bonding of all this work, and especially the arches, must be a matter of great care. A model, cut out of Caen stone, showing four courses of the arch, was produced, and clearly showed the alternate arrangement of the course. The arches were turned, and the spandrils filled up, there was a clear width of 14 feet from face to outside of the up-stream and down-stream facts of the bridge, giving ample 11 feet 6 inches in the clear between the parapet walls for carrying the line of rails over, nor, indeed, does it seem possible with any advantage could the design so as to carry a double way, for thus the pier would be unnecessarily extended in diameter, or otherwise the chamfering of the soffit in—both inadmissible, one from interfering with the water-way, and the from the practical difficulty of bonding the work.

The quarries from whence the stone was obtained were in the immediate vicinity of the works. It was of the blue Pennant grit, called by Sir H. De la Beche in the Government geological survey of this district, "The equivalent of the Pennant grit of the British coal measures;" and very truly characterised it as being admirably adapted for engineering purposes. Its colour closely resembles that of the common building limestone of this neighbourhood. The stone used was the celebrated Aberthan hydraulic limestone, not only in the abutments, but in all parts of the structure. The foundations on the north side, including one of the river piers, were on rock or indurated gravel; but the south side the abutment, one land and one river pier, had to be sunk to a greater depth than originally designed.

From the loftiness and peculiar design of this bridge, it was, during its construction, an object of great interest; and most persons who visited it expressed opinions unfavourable to its ultimate stability, most of which objections were very futile. The real difficulty in the construction was found to be the adjustment of the spandril walls on the concave side, so as to gain the true line of curvature at the string course under the parapets, as on the concave side they had to gather out the courses of the spandrils about four inches, which, from the excellent quality of the stone, they were enabled to do.

It would seem necessary also to explain the reason for crossing the valley, instead of seeing it at such a height. Such structures seem rather to constitute the difficulty and expense of obtaining good gradients on cross-country lines, which necessarily intersect the rivers at elevations more or less considerable than that of a valley line, which, following the leading of one single stream, would not, unless for cogent reasons, cross it at all. The consideration of the form of the river made it clear that no other alternative remained but this skewed curved viaduct, intersecting the stream at the angle of 45°.

CHEMICAL STRUCTURE OF SOME COPPER SLAGS.

BY FREDERICK FIELD.

The phenomena occasioned by the continued action of heat upon mineral substances, in connection with various fluxes—such as lime, felspar, &c.—have been carefully studied by several eminent philosophers; their experiments, I believe, however, have been chiefly confined to the laboratory, and to the products obtained within the confines of the crucible in the assaying furnace. Many hundred analyses of slags, resulting from all kinds of fluxes employed by the assayer, have been made by M. Bertier, and more recently by Mr. Mitchell, in order to show the different states of mineral and flux before and after fusion, and their researches have been invaluable to the assayer and practical smelter, throwing considerable light upon the various, and oftentimes complicated, action resulting at an elevated temperature. The following analyses have been made upon the products of furnaces, in which the ingredients were enabled mutually to re-act upon a more extended scale—the fluxes being, at the same time, not very unlike those employed by the assayer. The experiments described below will, I hope, not be entirely destitute of interest—phenomena frequently taking place in operations of considerable magnitude, which cannot be observed in the smaller and humbler experiments in the laboratory furnace. The slags—the analyses of which form the subject of the present paper—were obtained from the furnaces of the South American and Mexican Company in Chili, and the analyses were performed in the laboratory of that establishment. The method of smelting copper, carried on at the works of the company, is that patented by Mr. Napier.

When the mineral was mixed with 20 per cent. of its weight of common salt, and 15 per cent. of lime, and the whole kept in a state of fusion for some time, the slags, on being skimmed, presented an uniform mass, perfectly limpid, and free from metallic particles; upon cooling, however, the mass separated into two distinct portions, which could be divided from each other with the greatest facility. A slight blow of the hammer being sufficient to cause them to fly asunder, it appeared to me interesting to determine the composition of both portions, inasmuch as they presented very distinct physical appearances—the lower stratum having a highly crystalline texture, very much resembling certain species of syenitic rock; while the upper portion had a fine glassy appearance, totally devoid of crystallisation. This latter, which we shall distinguish as No. 1, or glassy slag, possessed a fine dark-green colour, closely approaching to black, having exactly the appearance of the glass from which the common wine bottles are manufactured; it presents a highly conchoidal fracture, and was immediately decomposed by aqua regia, and even by boiling hydrochloric acid. A qualitative analysis showed the presence of silicic acid, alumina, oxide of iron, lime, magnesia, manganese, chlorine, sodium, with traces of sulphur. The following is its composition in 100 parts:—

Silica	49·26
Alumina	12·37
Protoxide of iron	18·60
Lime	7·34
Magnesia	2·62
Oxide of copper	0·70
Chloride of sodium	0·48
Soda	7·93
Manganese, Sulphur	traces.
Loss in analysis	0·20
	100·00.

The chloride of sodium was estimated from the amount of chlorine obtained by boiling 200 grains of finely pulverised slag for an hour with distilled water, and subsequent precipitation with nitrate of silver. As the slag was perfectly decomposable by aqua regia, fusion with baryta for the estimation of the soda was unnecessary, that alkali being determined by the method proposed by Heintz, for the separation of magnesia from the alkalies. The lime, alumina, iron, &c., having been separated by carbonate of ammonia, a stream of hydro-sulphuric acid was passed through the filtrate, previously acidulated, in order to precipitate traces of copper; after boiling with a subsequent addition of ammonia, phosphate of ammonia was added to precipitate the magnesia; an addition of acetate of lead removed the excess of phosphoric acid, and again the excess of lead was separated by means of a mixture of carbonate of ammonia and ammonia; on evaporation to dryness, and subsequent ignition, chloride of sodium remained in the platinum basin, from which the amount existing as such in the slag was deducted, and the soda estimated from the residue. This slag, as before remarked, has a clear glassy structure, and has not the most distant appearance of containing copper. The 0·70 per cent. of black oxide, found by analysis, is present, in combination with silicic acid.

In contact with metallic iron, the colour is changed from black to a fine red, owing, doubtless, to the reduction of the protoxide to the suboxide, in the following manner:—2 ($Cu\ O\ Si\ O_3$) + Fe = ($Cu_2\ O\ Si\ O_3$) + $Fe\ O\ Si\ O_3$. This phenomenon was always observed when the slag had come in contact with the *rubble* used by the furnace-man, or with the *foreplate* of the furnace.

The under slag (No. 2), which is termed sharp, or metallic slag, presented a very different appearance from the former; it was undecomposable by aqua regia, and a long continued fusion with carbonate of soda was necessary for its entire decomposition. A qualitative analysis proved the existence of the same substances as in the former specimen. On ignition to whiteness with carbonate of baryta, only very small quantities of alkali were observable.

The following is the quantitative analysis of this slag:—

Silica	49·60
Alumina	14·00
Oxide of iron	32·94
Lime	1·23
Magnesia	0·11
Oxide of copper	1·06
Soda	0·70
Chloride of sodium	0·43
Manganese	traces.
	100·07.

It will be observed that the amount of silica is nearly equal in these two analyses; in the former it is 49·26, in the latter 49·00; but all the other ingredients, the alumina excepted, are in widely different proportions. In fact, slag No. 2 may be almost considered as a silicate of iron and alumina, these three bodies alone forming more than 96 per cent. of the whole mass. We may imagine that slag No. 1 acted as a bath from which No. 2 had crytallised; that silica, in certain combinations with soda, iron, lime, &c., dissolved a silicate containing an excess of iron, and deposited it, on cooling, in crystalline forms, more or less defined; in other words, that the metallic slag was held in solution in the glassy slag, the latter containing nearly the whole of the soda, lime, and more fusible compounds. However small the quantity taken from the furnace, the same phenomenon always occurred—viz., the complete separation of a crystalline slag from a homogeneous mass, resembling black glass.

When smaller proportions of salt, but the same quantity of lime, were employed—viz., 10 per cent. of the former, and 15 per cent. of the latter, in regard to the mineral of copper, no separation of the slags took place on skimming; but the mass presented a very different aspect to the two former specimens. It was now highly variegated, and had a beautiful serpentine appearance, very much resembling many specimens of igneous rock I have since seen in this country (Chili), and so hard as to be capable of receiving a beautiful polish. A qualitative analysis gave me the same ingredients as in the two former slags, with the addition of sulphur and unburned carbonaceous matter. This slag, also, had to be decomposed by fusion with carbonate of soda, and the alkali it contained was estimated by fusing it with baryta; 100 parts gave me—

Silica	42·20
Alumina	10·80
Lime	6·43
Magnesia	2·14
Protoxide of iron	31·00
Oxide of copper	0·45
Chloride of sodium	0·24
Soda	3·44
Sulphur	1·43
Escoria	1·56
Loss in analysis	0·21
	100·00.

On examining some escorias from a furnace some few leagues from Coquimbo, I observed, on breaking a portion, beautiful needle-shaped crystals grouped together in large and distinct cubes in one of the cavities, having very much the appearance of those in No. 2, only larger. They were separated with some difficulty from the mass, and in qualitative analysis showed the existence of lime, silica, oxides of iron and copper, alumina and magnesia; 24 grains were analysed, and yielded the following per centage composition:—

Silica	35·60
Protoxide of iron	50·46
Alumina	6·85
Lime	4·48
Magnesia	0·16
Oxide of copper	2·32
Loss	0·13
	100·00.

The large amount of protoxide of iron is here to be observed, and from many experiments not yet concluded, it appears to me that the other ingredients in the crystals, besides the silica and iron, are not essential to the crystalline structure of the mass, but may be reckoned as foreign substances. I have not as yet, however, met with any that contained silicium, oxygen, and iron.

As I am at present constantly engaged in investigations regarding the nature of the substances placed in the furnace, and the condition they present after fusion, I trust to be able, at some future time, to lay before the society a more detailed account of the various silicates obtained. Every different proportion of ingredients, every prolongation of temperature, causes not only a difference in constitution, but an entire change in physical appearance, so that, perhaps, by many careful analyses, we may arrive at more satisfactory conclusions, regarding the formation of natural silicates, and other minerals of igneous origin.

ON THE PRESENCE OF SILVER IN METALLIC MINERALS, AND THE MEANS TO BE EMPLOYED FOR ITS EXTRACTION.

In a memoir presented to the Academy of Sciences at Paris, in July 1847, by MM. Malaguti and Durocher, it was shown that silver was found in combination with many metallic sulphurets in which it was not previously supposed to exist. These gentlemen have now further extended their experiments, from which it appears that silver is found in most metallic minerals, even when they are not obtained from silver veins. As a confirmation of this, it appears that out of upwards of 200 different substances examined there was only one in twenty which did not yield silver. In some of these substances, it is true, only slight traces of silver was found; while in others it required great skill in the mode of testing to determine its presence with certainty.

In experiments made by MM. Malaguti and Durocher upon the roasting of several kinds of sulphurets, they were somewhat surprised to observe that one-half the quantity of silver contained in blende ores was liable to be lost by sublimation. Under certain circumstances, therefore, this metal is volatilized with much greater facility than was supposed: it will be found incrusted on the sides of the apparatus. This is also the case with the silver sublimed in the roasting of galena ores; and the explanation of an important fact in metallurgy is thereby furnished—viz., that notwithstanding the precaution taken to collect the pulverulent cadmium from the chamber of condensation, there is always considerable loss in the silver carried off, which clings to the inside of the pipes, but so as to be capable of being separated therefrom.

Silver appears also to be unequally distributed throughout the various metallic compounds; thus oxides and saline compounds are always less rich in it than sulphurets; and amongst these latter, compounds of iron are generally less rich in silver than those of lead, copper, and zinc. These remarks, touching the unequal distribution of silver in substances found in nature, seem, moreover, to be confirmed by what takes place in operating by the dry method, whether performed in the laboratory or in metallurgical works. The universal diffusion of silver throughout the mineral world would lead to the belief that other metals are likewise diffused amongst various substances in nature; in fact, this has already been found to be the case with regard to iron. This led to the examination of crystallized minerals, apparently in a state of purity. Twelve samples of galena were experimented upon, and in all of them, besides silver, considerable quantities of iron, copper, and zinc, were found.

In order to ascertain the state in which silver is combined, in small quantity, with various metallic minerals, and especially sulphurets, sulpho-arseniurets, and sulpho-antimoniurets, various re-agents were employed, which were supposed capable of acting upon metallic silver, and not upon its sulphuret,—especially when this latter is in combination with sulphurets of other metals. The employment of liquid chlorine, bichloride of copper, and persulphate of iron, did not furnish any very positive results; more certain indications were produced by means of mercury; but out of 38 specimens which were experimented upon, several of which were very rich in silver, only eleven gave up a portion of their precious metal to the mercury. A comparison with the results of experiments made under similar conditions, upon substances in which metallic or sulphuretted silver had been introduced, led to the conclusion that, in all probability, silver does not exist in the same form in all sulphurets containing small quantities of that metal; but that it is often combined in the state of sulphuret with the substance accompanying it. Besides, it appeared from former experiments, that metallic sulphurets could not contain silver in the state of chloride or bromide; and it was moreover observed, that remarkable re-actions took place between chlorides and sulphurets. These latter may be divided into three kinds:—1st, bimolecular sulphurets, such as those of zinc, cadmium, lead, &c.; 2d, sulphurets containing several molecules of sulphur, and susceptible of giving up a portion of it—bisulphuret of tin, for example; 3d, sulphurets not saturated with sulphur, and ready to take up a greater quantity, such as protosulphuret of copper. The first kind of sulphurets re-acts upon chloride of silver by double decomposition; the second undergoes partial reduction, and is converted thereby into protosulphuret; and the third partially reduces chloride of silver, upon which it also acts by double decomposition. The arseniurets, sulpho-arseniurets, and sulpho-antimoniurets, under the same circumstances, act upon chloride of silver in the same manner as the sulphurets.

These different bodies were introduced into the presence of the chloride of silver, dissolved sometimes in ammonia, and sometimes in hyposulphate of soda; but the presence of the solvent produced no other effect than that of accelerating the phenomenon and facilitating its observation, without, however, changing its essential conditions. It is curious to observe, that the decomposition produced by sulphurets, arseniurets, &c., is often as clear and complete as if bodies dissolved in water were operated upon. The following bodies may be given as instances of this—viz., native sulphuret of copper, arseniuret of antimony, the arsenical ores of cobalt and nickel, &c. Certain sulphurets, which are not, however, numerous, have scarcely any action; such for instance, as sulphurets of mercury and grey cobalt, which latter differs very much in that respect from gray nickel. Metallic iron resembles it in this particular, as it precipitates little, if any, of the silver in solution, under the form of concentrated ammoniacal chloride, or even under the form of a nitrate. The power possessed by sulphurets of decomposing chloride of silver, is generally greater in those which act by reduction, than in those which produce a double decomposition; this power appears also to be proportionate to the electro-chemical state of the metals. It may also be mentioned, that the various minerals belonging to one kind, possess decomposing properties, varying according to their differences in composition, their crystalline form, and degrees of density and cohesion.

Bromide of silver, in the presence of the metallic sulphurets, presents the same phenomena of decomposition as the chloride. In short, all these facts appear to depend on a general law of the re-action of sulphurets upon chlorides, and of insoluble salts upon soluble salts. It has, moreover, been ascertained that these re-actions are produced as well by the dry as the wet method: thus, galena decomposes chloride of silver in a state of fusion; and blende has been known to arrest the vapour of this chloride, and transform it into sulphuret of silver. The same vapour is also decomposed, by the help of heat, by quartz, feldspath, argil, and silicates generally. The re-actions of sulphurets upon chlorides (which, it has been noticed, are produced under conditions so various) have evidently a character of generality; and an observation of the metalliferous deposits tends to confirm this; chloride and bromide of silver not being found in the midst of metallic sulphurets, but in the upper part of the veins which have been changed and oxidized under the influence of exterior causes. The explanation of certain geological phenomena is also arrived at by the above experiments—for instance, the concentration of the ore of silver (both native and sulphuretted), which is found in the veins of Kongsberg, is found in contact and agglomerated with schistous strata, impregnated with various metallic sulphurets, iron and copper pyrites, blende, and galena.

SILVER LODE.—A very valuable silver lode has been discovered on Ell Bridge Estate, the property of Mr. W. Wymond, in the parish of Landulph, about four miles from Saltash, on the direct Callington-road. Applications have been repeatedly made for the past 20 years for a grant of the sett, which however could not be obtained until about a fortnight since, the proprietor not believing his estate contained any mineral, and supposing that his land would be broken up to no purpose. Operations were commenced on Monday week last, and when only 8 feet from the surface a valuable lode of silver-lead ore was opened on, showing that the opinions of the practical miners were correct. The ore taken from it, having been carefully assayed, produced 10 in 20 for lead, and 200 ozs. of silver in the ton of ore. The shaft has since been sunk about 4 fathoms, where the lode is 4 feet big, and the ore found to be of much greater richness. This is one of the richest lodes ever seen in our locality so near the surface.—*Plymouth Guardian.*

New Patents.

[From the *Mechanics' Magazine* of this day.]

SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

ADAM YULE, Dundee, master mariner; and JOHN CHANTER, Lloyd's, London: Improvements in the preparation of materials for coating ships and other vessels. The object of this invention is to protect ships' bottoms, whether plain or sheathed, from marine deposits, by coating them with one or other of the following compositions:—1. 8 to 10 parts of bullock's gall, 30 lbs. of carbonate of iron or plumbago reduced to a fine powder, mixed together to form a paste, to which 4 gallons of salt water are added to bring the whole to the proper consistency. [What relation is there between parts and pounds?]—2. 30 lbs. of carbonate of iron or plumbago in powder, 3 lbs. of white arsenic, 24 gallons of coal tar, naptha, or spirits of turpentine, and from 12 to 14 lbs. of Stockholm tar, dissolved in the above spirit.—[*Note*: In the case of iron or zinc, it is to be first coated with a solution of caoutchouc or gutta percha before laying on either of the above compositions.]—3. 10 lbs. of carbonate of iron or plumbago in powder, and 1 lb. of white arsenic, to which Russian tallow is added, with the assistance of heat to incorporate the whole together. This composition is to be applied hot, and rubbed over with the powder dry.—No claims are made in this specification.

J. K. D. ROGERS, High-street, Pimlico, professor of chemistry: Improvements in the manufacture of white lead. Mr. Rodgers proposes to manufacture carbonate of lead, commonly called white lead, by suspending pieces of sheet or cast lead, bent in the form of two sides of a triangle, upon frames erected in a room, or chamber, which is capable of being darkened and rendered air-tight, or nearly so, when required. Underneath the frames are troughs, some of which are filled with a fluid capable of passing into the state of vinous fermention spontaneously, or of doing so on the addition of yeast, and thereby evolving carbonic acid gas. The other troughs contain sour beer, vinegar, or other similar fluids, into which steam-pipes from a boiler are caused to open, so as to produce acetic acid, or pyroligneous acid and aqueous vapours. The *modus operandi* is as follows:—The pieces of lead are suspended in the frames as close together as possible without actual contact, and the chamber made air-tight, or nearly so, and maintained at a temperature of from 70° to 80° Fahr. As soon as the carbonic acid gas is evolved, the chamber is darkened, and steam admitted about three times in every 24 hours, to produce acetic, or pyroligneous acid and aqueous vapours. The chamber is provided with a manhole, to allow of the troughs being replenished when the fluid contents have been exhausted, which will occur at the expiration of 48 hours. This operation for converting metallic lead into carbonate of lead generally takes 12 days.

Claims.—1. The use of a chamber, or room, in the manufacture of white lead, which is capable of being made air-tight, or nearly so, when required, and into which the supply of carbonic acid gas, and acetic acid, or pyroligneous acid and aqueous vapours, may be controlled or regulated.—2. The introduction of steam into the converting chamber, either alone or combined, as described.

FLORENTINE JOSEPH DE CAVAILLON, Paris, chemist: For certain improvements in obtaining carbonated (query carburetted?) hydrogen gas, and in applying the products resulting therefrom to various useful purposes. The patentee remarks, that the ordinary carburetted hydrogen gas has hitherto been manufactured from coal alone; but, that he proposes to mix with the coal, in the proportion of 50 per cent., bones, suet, oleaginous seeds, spent bark, and sawdust, which has been used in the purification of oils, or any fatty or oily waste. These substances are moistened with molasses or empyreumatic oil, and mixed with the coal; after which the whole is shovelled into ordinary gas retorts, and distilled in the usual way. The resulting products are stated to be—1. Carburetted hydrogen gas, of a highly illuminating power.—2. Animal charcoal.—3. Animal and vegetable charcoal, in powder, which may be applied to the preparation of manure.—4. Empyreumatic oil.—5. Rich ammoniacal liquors.—In order to economise the lime employed in the purification of gas, it is proposed to employ a purifying powder, composed one-half of any of the natural or artificial sulphates of lime (by preference, plaster which has been used in building), animal charcoal, vegetable charcoal, coke, river or sea sand, spent bark, sawdust, peat, or turf, sulphate and oxide of lead, all reduced to powder, and wetted with dilute sulphuric acid, or acidulated water of 6° to 7° Beaumé. The gas to be purified is made to pass through perforated metal plates, or wire gauze shelves, upon which is laid moss to prevent the apertures being clogged by the refining powder which is laid thereon. The lime is laid above the powder. The quantity of lime employed is one-third, and that of the refining powder two-thirds, which last is composed of purifying substances, such as the sulphates of lime, inert substances rendered purifying, such as sawdust saturated with sulphuric acid, and inert substances, such as powdared coke. When the materials are charged with too much ammonia or sulphuretted hydrogen (which can be ascertained by causing the gas to come in contact with tumeric test paper and paper saturated with acetate of lead, which will be turned black), they are to be replaced by a fresh supply of refining powder and lime. No claims are made in this specification.

BENJAMIN AINGWORTH, Birmingham, button-maker: For certain improvements in iron and other metals for use in the manufacture of gun-barrels, and all articles to which the same ornamented metals may be applied. These improvements consist in various new modes of combining iron and steel to be afterwards manufactured into gun-barrels, which will, in consequence, on being subjected to the action of acids, have an ornamental surface; and in compounding iron and brass, or iron and copper, for producing ornamental surfaces on other articles than gun-barrels. We quote a few examples:—

1. A sheet of iron or steel has a pattern stamped out on it, and is laid on a sheet of steel or iron—the two sheets being of different metals—heat is then applied, and the two subjected to pressure in order to imbed the one in the other. They are afterwards thoroughly incorporated by welding or otherwise, and made into plates, skelps, or ribands, to be subsequently manufactured into gun-barrels, which are browned by acid, whereby the resulting difference in the colours of the iron and steel will cause the pattern to be visible on the surface.—2. The stamped-out portions of iron or steel are imbedded in a sheet of steel or iron, and made up as before.—3. Wires of iron or steel are laid on a sheet of steel or iron in any form fancy may dictate, and welded together.—4. Iron and steel wires are twisted into strands, or strands of iron wire and steel wire are made into ropes, which are afterwards to be welded together.

LIST OF PATENTS GRANTED DURING THE PAST WEEK.

E. Highton, of Clarence Villa, Regent's-park, Middlesex, engineer, for improvements in electric telegraphs, and in making telegraphic communications.

T. Auchterlonie, of Glasgow, manufacturer and calico printer, for improvements in the production of ornamental fabrics.

E. Ormerod, of Manchester, mechanical engineer, and J. Shepherd, of Chorlton-upon-Medlock, mechanical engineer, for improvements in or applicable to apparatus for changing the position of carriages on railways.

C. Atherton, member of the Institution of Civil Engineers, of London, for an improved apparatus or machinery for regulating the admission of steam to the cylinders of steam-engines.

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

Francois Van Den Brande, Bedford-street, Bedford-square, extending loo table.

G. Houghton, Birmingham, college cap.

J. Sanders, Birmingham, door knob. [boilers.

D. Mather, Dundee, automaton blow-off apparatus, and salinometer for marine steam

Langman, Ward and Co., Wolverhampton, burner for burning luxurine or other spirit.

T. Wharton, Birmingham, inkstand.

H. Hopwood, Scarborough, portable mangle.

J. and E. Ratcliffe, Birmingham, universal reservoir inkstand.

J Sims, Tavistock, oven for a domestic cooking stove.

We have had an opportunity of inspecting a small collection of portraits, painted in crayons, or pastiles, by M. Isidore Magués; they consist of heads and half-lengths, the size of life, and exhibit extraordinary merit, both in drawing and colouring—indeed, the effect produced by this material is truly astonishing, and resembles more that of oil or fresco, by the depth of colour and exquisite finish. The likenesses are most excellent, being faithful copies of Nature, and, when known, must meet with that support which the great talent of the artist deserves.

London: Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their offices, No. 26, FLEET-STREET, where all communications are requested to be addressed. [February 9, 18